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A

MEMOIR
CONCERNING THE
DISEASE OF GOITRE,
AS IT PREVAILS
IN
DIFFERENT PARTS
OF
NORTH-AMERICA.

BY BENJAMIN SMITH BARTON, M. D.

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“ I know but one class of people who never err ; those who do nothing,
observe nothing, and make no experiments.”

FONTANA.



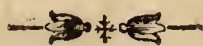
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TO
JOHN FREDERICK BLUMENBACH, M. D. F. R. S.
PROFESSOR OF MEDICINE, IN ORDINARY,
IN THE
UNIVERSITY OF GOTTINGEN, &c. &c.



DEAR SIR,

I CANNOT suppose the subject of the following Memoir uninteresting to any person engaged in practical or physiological medicine. It must, however, be peculiarly interesting to a physician who has, for many years, cultivated the great science of Physiology with so much attention and success as you have done.

As the disease of Goitre is extremely common in some parts of Germany, and in other parts of Europe, the philosophical physicians of those countries will not deem it an incurious point to examine, with attention, what affinity there is between the soil, the climates, and exposure of the European districts in which this disease prevails, and the soil, the climates, and exposure of those countries of America in which it also prevails. If the facts contained in my memoir should serve to throw any light upon the nature of this complaint, I shall think the time which I have employed in the investigation has not been altogether misapplied.

PERMIT me to add, that from your correspondence, and from your valuable writings, I have derived much pleasure and improvement, especially in the investigation of one very interesting and difficult question: I mean the natural history of the physical differences among the various families of mankind. Your late publication* on this subject is replete with ingenuity, and with various and extensive learning. My researches (part of which will shortly be published) relative to this question, will, perhaps, have little to recommend them to the notice of such writers as yourself, and our common friend Professor Zimmermann, except the circumstance of my having examined some of the most interesting of the human varieties, and those too, by most authors, more imperfectly depicted than the rest, in the very countries in which they exist.

THAT you may long continue to cultivate the sciences of Physiology and Natural History, with the same zeal, patience, and success, with which you have hitherto cultivated them,

Is the sincere wish of,

Dear Sir,

Your friend, and humble servant, &c.

BENJAMIN SMITH BARTON.

PHILADELPHIA,
December 8th, 1799.

* De Generis Humani Varietate Nativa. Editio Tertia. Gottingae, 1795.

P R E F A C E.



THE greater part of the following Memoir was written in the winter of 1797—1798, soon after my return from my journey through the western parts of the state of New-York. It was read to a very respectable class of gentlemen, who attended my course of lectures on the *Materia Medica*, in that season, and again in the winter of 1798—1799. I confess that the paper was originally drawn up for the press; and I intended that it should have been published at a much earlier period than the present. From time to time, I delayed the publication, in hopes of being able to communicate something more worthy of the notice of physicians, and of men of science. Unfortunately, however, I have been disappointed in my expectations of receiving information from a quarter where it would have been most easy to have procured answers to my queries. I now fling the memoir upon the public, much more from a desire to draw forth information, than from any hope of communicating a great deal that is new.

I INTREAT physicians (who I cannot but think

are better qualified to set in judgment in medical matters than other men, and who are, perhaps, as candid as any other large body of men): I intreat the physicians, who may favour these pages with a reading, to recollect, that I am not attempting to give a complete history of the Goitre of our country. I aim at little more than a collection of FACTS relative to this singular disease, as it prevails in various parts of America, particularly the United-States. Thus far, I may hope I have not failed in my attempt. That the lover of system will be disappointed, I clearly foresee. Indeed, I myself exceedingly regret, that the causes of a disease which, even in its mildest form, is uncomely, and which, in an higher degree, is attended with much inconvenience to the patient, and often, in Europe at least, with the loss of mental strength, should be so imperfectly known. The opportunities which I have had of investigating the nature of this disease, though greater than those of many of my countrymen, were still very inconsiderable. I do not, therefore, think it necessary to apologize for my want of *decision* on a subject concerning which the decisions of preceding writers have, so generally, been unsuccessful, or unphilosophical. I know that the path to temporary glory leads through the fairy-land of theory: but the road to present and to future usefulness lies through the field of facts and observation.

I HAVE not, however, in the following inquiry, omitted the consideration of the CAUSES of goitre. On the contrary, I have devoted a good deal of attention to the theories of several writers on the subject. I have rejected most of those theories, in consequence of having satisfied myself, that the causes to which the disease has been ascribed do not always exist in those countries or districts, in which the complaint prevails, to a considerable degree. If, in this part of my memoir, I have adduced any new facts or arguments to show the errors or defects of preceding theories, I may, perhaps, flatter myself, that I have made some nearer approach towards a detection of the real causes of the complaint. But how far I have been successful in this business, it must rest with the public, or with those who may have opportunities of more critically investigating the disease, to determine.

I HAVE ventured to take one step farther: to CONJECTURE, that the remote or primary cause of goitre is a *miasm* of the same species as that which produces intermittent and remittent fevers, dysenteries, and similar complaints. I cannot, in strict propriety, claim this theory as my own. It is hinted at, and rejected, by Mr. De Saussure. If it be entitled to any attention, I have no doubt it will receive it. For ours is the age of medical theories: so much so, indeed, that a physician,

who *writes*, can expect to do but little with the public, unless he learns to *speculate*. I submit my speculations to their fate—not very anxious what that fate may be.



I SHALL transmit some copies of this memoir to gentlemen, particularly physicians, residing in those parts of our country where the Goitre prevails. I earnestly call their attention to the subject. Whatever will tend to illustrate the history or the nature of the disease will be gratefully received and acknowledged by me. I shall be equally thankful for careful corrections of any of the errors into which I may have fallen. “ J’ aime autant une personne
 “ qui me relève d’une erreur, qu’une autre qui
 “ m’apprend une vérité, parce qu’en effet une er-
 “ reur corrigée est une vérité.”

BUFFON.

INTRODUCTION.

AMONG the diseases to which the human kind is subject, there are few which, within the last thirty years, have solicited more of the attention of travellers, of philosophers, and physicians, than that which is generally known by the name of **GOUETRE**, or **GOITRE**. This is a tumour or swelling of the anterior part of the neck, affecting more especially the thyroid gland.

THE great father of nosological science, the industrious and learned F. B. De Sauvages, has mentioned four different species of this disease, under the generick name of **Bronchocele**, or **Gouëtre**. These are the **Bronchocele Botium** of Roncallus; the **Bronchocele ventosa** and the **Bronchocele farcoma** of the same author, and the **Bronchocele aquosa** of Montaltus.

I HAVE not had an opportunity of seeing the works of Roncallus or Montaltus, and will not, therefore, pretend to say, how far there is a foundation for the division of this disease into the four different species mentioned by these authors, and

by Sauvages. It would seem, however, that neither the Bronchocele ventosa nor aquosa are the disease which is now so much mentioned by travellers under the name of Goitre. This disease appears to be the same as the Bronchocele Botium and the Bronchocele sarcoma of Roncallus. Notwithstanding that Sauvages considers these as two distinct species, I am inclined to believe, from his description of them, that they are the same disease, differing in extent or degree, and from the combination of accidental circumstances. I shall here insert his descriptions. Speaking of the Bronchocele Botium, he says, “ *Bergami familiaris est, & bernia gutturis vocatur; est steatomatosus vel scirrhosus tumor glandularum thyroidearum. Rusticos sæpiùs afficit quàm cives, & mulieres præ viris, quod tribuit eruditus Pasta debilitati harum partium ob vomitus frequentes gravidarum: sæpè hic tumor dependet à gutture adinstar pyri; quandoque sponte in suppuratum abit; sæpiùs ita indurescit ut cartilaginis instar resistat.*

“ LICET hic morbus hominem deturpet, vocem ejus lædat, mentem hebetet, dyspnœamque creet, pauci sunt qui eum medicamentis aut ferro aggrediantur, ne discusso tumores graves, pectoris morbi, ut tussis, asthma, succedant, imò phthisis, nisi tamen affectus recens fuerit, qui solus tutò potest curari. Puerperas magis afficit quàm virgines.”

SPEAKING of the other species, or Bronchocele farcoma, the nosologist says, “ Illa species quæ non pendet à lymphâ spissâ in muscutorum interstitiis, textuque glandularum congestâ, sed ab ipsâ partium excrefcentiâ, medicamentis insanabilis prorsus est, sed quibus signis innotescit hoc non docet *Roncallius*. Familiaris est hic morbus Helvetiis, Germanis ad Gossariam, Pedemontanis, Brixianis in Statu Veneto, &c: an aquis nivalibus, an cibis crassis, ut castaneis, tribuendum? * ”

A RESPECTABLE French physician†, in a dissertation *De Struma Bronchocele dicta et de Hemeralopia*, which was published at Nancy, in 1787, has divided the goitre into ten species; and, he informs me, that since that period he has discovered two other species of this disease. Not having an opportunity of seeing this dissertation, it is impossible for me to judge of the propriety of the division which I have mentioned. I am inclined, meanwhile, to

* Nosologia Methodica sistens Morborum Classes juxta Sydenhami mentem & Botanicorum ordinem. Auctore Francisco Boissier De Sauvages, &c. &c. Tomus Primus. p. 157 & 158. Amstelodami, 1768.

† Doctor Louis Valentin, lately chief physician to the French military Hospitals, at Norfolk, in Virginia, and at present a physician in France. In a letter, which is dated Montpellier, August 20th, 1798, the doctor informs me, that besides the inaugural dissertation, he has written an extensive memoir on goitres, which was read before the Academy of Surgery of Paris in the year 1789, and by them honored with a gold medal.

suppose, that the ingenious author has sometimes considered as *species* what are, in reality, nothing but *varieties*. This is not an uncommon error among physicians, particularly among the nosological writers, who, by unnecessarily dividing species, and by crowding their pages with an intricate nomenclature, have essentially injured the important science which should teach the appropriate names, the distinctions, and the arrangement of diseases.

It is not my intention, in this Memoir, to give an account of the disease of goitre in different parts of the world. I have neither the necessary materials, nor the leisure for such a work. Neither is it my intention to say any thing more concerning this disease in Europe, &c. except in so far as I may deem it necessary to illustrate my account of the disease as it exists in various parts of North-America. The reader, who wishes to obtain farther information on the subject, may consult the different authors whose names, and the titles of their works or papers, are mentioned in this memoir. I am not ignorant, however, that several respectable writers, whom I have not mentioned, have written on this disease. Their works are not in my possession, and I have sometimes found it difficult to obtain a correct idea of the facts which they relate, and of the opinions and speculations which they adopt.

THE disease of which I am speaking is not confined to any one particular country. It may be considered as endemial in certain districts of Germany, France, Switzerland, Italy, Bengal, Boutan, South-America, &c. in very different climates. I believe it has been observed to prevail more especially in mountainous countries: hence Juvenal says,

*Quis tumidum Guttur miratur in Alpibus?**

It must not, however, be supposed, that the goitre is always to be met with in mountainous countries, as the strong passage of the Roman poet would lead one to suppose. On the contrary, this disease is entirely unknown in many mountainous countries; and Dr. Coste, “who was born in the neighbourhood of the Alps, asserts, that it is not more common there than it is in many of the provinces of France. This writer has remarked, that the city of Geneva is the only situation near the Alps where the imputation of Juvenal is justified.†”

* “ Quis tumidum guttur miratur in Alpibus? Aut quis
In Meroë crasso majorem infante mamillam?
Cærule quis stupuit Germani lumina, flavam
Cæsariem, & madido torquentem cornua cirro?
Nempè quòd hæc illis natura est omnibus una.”

SATIRA XIII. l. 162—166.

† Recueil des Oeuvres Physiques et Medicales, publiées en Anglois et en Latin, par M. Richard Mead, Medecin du Roi de la Grande Bretagne, &c. &c. Par M. Coste, Medecin de l'Hopital Royale et Militaire de Nancy. I have not seen this work.

SECTION I.



OF THE DISEASE OF GOITRE IN NORTH-AMERICA.



IN a visit which I paid to the Oneida-Indians, who are settled at Oneida*, in the state of New-York, in the beginning of August, 1797, I observed that an old woman, the wife of the principal chief of the nation, had a considerable goitrous tumour, principally on the anterior part of her neck. The old man, her husband, informed me, that this complaint is not uncommon among the Indians (Oneidas), and also among the Dutch settlers. This was a clue to farther inquiries on the subject, which I did not neglect to attend to, in the course of a very interesting journey which I had undertaken for the recovery of my health, and for the collection of materials for the natural history of the United-States.

Soon after I had received the information from the old Indian, I had an opportunity of seeing a

* The village of Oneida, commonly called the Oneida-Castle, is situated on the Oneida-creek, which runs into the Oneida-lake, about twenty-one miles nearly south-west of Old-Fort-Schuyler, which last place is about ninety-six miles, nearly north-west by west, from Albany.

newly-married and very young Indian woman, of the same nation, who was deformed by a similar swelling. I was informed, that this young woman's sister laboured under the complaint to so great a degree, that, at times, it much impeded her respiration. In my return to the village of Old-Fort-Schuyler, on the Mohock-river, I had farther opportunities of obtaining information concerning this disease. Lodging at a village of Indians, called the Brother-town-Indians, about fourteen miles from Oneida, I saw some cases of the complaint, and found that in this place several of the Indians were affected with it.

HERE I met with a young physician, who informed me, that the goitre is a *common* complaint in this part of the state of New-York. He said, he had known the disease to appear among some people from Connecticut, soon after their arrival in this part of the country. He even assured me, that some of the settlers from New-England had returned to that country again, alarmed at the appearance and progress of the disease in the new countries to which they had moved their families.

* I HAVE said, that the disease is not unknown among the Dutch inhabitants of New-York. I have lately been informed, that it is not uncommon

at Fort-Herkemer, on the German-Flats, sixteen or eighteen miles nearly south-east of Old-Fort-Schuyler. It is also frequent at Fort-Dayton; and at a village, called Henderson-town, about seven miles south of Fort-Herkemer.

SOME of the most remarkable cases of the disease are in a Dutch family which lives upon the north side of the Mohock-river, immediately opposite to Old-Fort-Schuyler. This family consists of a father, a mother, and four or five children. Every one of them is afflicted with the goitre. The swellings occasion some of them to look hideous. This family removed from the river below this, to the place where they now* dwell, about fifteen years ago, at which time they had nothing of the disease among them.

IN the course of my journey from Old-Fort-Schuyler, south-westward, to the Cayuga-Lake, a distance of about eighty miles, I had an opportunity of acquiring farther information concerning the disease, which in some parts of the country is known by the name of the “SWELLED NECK.” In almost the whole of this tract of country, the goitre prevails to such a degree, that every adult I met

* In 1797, since which time I have heard nothing farther concerning this unfortunate family.

with was acquainted with the circumstance of its existence, and was capable of giving me some information about it*.

THE goitre is very common in the Military Tract of New-York. As far as I can learn, it prevails to the greatest degree in the township of Manlius†. It is also very common in the Onondago-Valley, as in the neighbourhood of the Onondago-Salt-Springs, &c. In this part of the country, it affects both Indians and Whites. I shall afterwards have occasion to mention some other parts of the state of New-York, in which this disease prevails.

THE goitre of the state of New-York assumes very different appearances, in different persons. In many, it seems to be merely an enlargement of the column of the neck, without any very evidently circumscribed tumour immediately in the region of the thyroid gland. In others, the whole anterior part of the neck is evidently swelled, and protube-

* On the 8th of August, on my way to the Jeniffeia-country, having alighted at the house of one Clock, six miles south-west of Oneida, I saw an old (white) woman, who had a considerable goitre. She informed me, that there were several persons, in the neighbourhood, who had the same complaint, and that, among others, her grand-son's wife had it. I am induced to be thus particular, that future travellers, through this part of the country, may know where to look for the disease.

† In the county of Onondago.

rant. In some, the protuberance hangs down like an enormous wen, and in others, again, it assumes the appearance of a pear, hanging from, or attached to, the throat. I observed no instances of this last kind, but I am assured that they are not uncommon among the females at Henderson-town, south of the Mohock-river, where a particular mode of dress is frequently made use of to screen the deformity from common or inquisitive view.

THIS disease makes its appearance in persons at various periods of life. Even infants at the breast are not exempted from it. But I believe, such cases are rare. The complaint is, certainly, much more common among adults. Along the Mohock-river, it is said to be principally confined to adults. Persons removing into the country, where it prevails, have been attacked with it, even at a very advanced age in life.

FROM all my inquiries concerning the goitre of New-York, I think there can be little doubt, that females are much more liable to it than males. I saw several females but not one male affected with it. At Brother-town, where there are a good many cases of it, it is principally confined to the female-sex. A country physician, residing in this neighbourhood, remarked that the complaint is more common among females than males. In Manlius, and in other parts of the Military Tract,

where the disease is very frequent, I was constantly informed, that women much more than men are affected with it. At Fort-Herkemer, Fort-Dayton, and at Henderson-town, already mentioned, the disease is more common among females than among males, and is said to be principally confined to adults. An intelligent friend of mine, Mr. James Geddis*, who resides at Onondago, informs me, that he cannot learn that it ever affects men in that part of the country. We shall afterwards see, that at Pittsburgh, and in some other parts of Pennsylvania, it is more common among females than among males.

THESE facts are calculated to shew the intimate relation of the goitre of our country and the same disease as it has been observed in Europe, and in other parts of the world. It is admitted, that the Bronchocele Botium affects women more than men; and we have seen that Pasta has endeavoured to explain the cause of this circumstance.† All the writers on the goitre of Europe‡ have observed, that it is less frequent among men than among women. In Boutan, according to Mr. Saunders, the

* “ From all the accounts I can get from the Cohos-country in Connecticut, where this disorder prevails, and all my observations here (at Onondago), I cannot learn that it ever affects men.” Letter to me, dated Onondago-lake, November 16th, 1798.

† See page 2.

‡ Coxe, Gautieri, Foderé, &c. &c.

case is the same*. I am inclined to think, that of a given number of goitrous persons in the old and in the new world, the proportion of females in the latter is much greater than in the former. But I ought to be sensible, that we are not yet prepared to make a calculation of this kind. Even in Europe, and in the other countries of the old world, our materials for such a calculation are too imperfect. But in America, they are peculiarly deficient. We are certain, meanwhile, that in both portions of the globe, the disease, in this respect, preserves a common feature: females especially are its victims.



THE goitre of the state of New-York is not confined to the human kind. In that part of the Military Tract which is called Manlius, I was assured that both sheep and young calves are sometimes affected with large swellings of their necks. A calf, which had been weaned about three weeks, and suffered to run loose, after drinking the water of a certain stream, became greatly affected with a swelling of the neck. The animal was soon killed, so that it is not known how much farther the dis-

* Philosophical Transactions, for the year 1789. Part First. "As those (Mr. Saunders observes) who labour most, and are the least protected from the changes of weather, are most subject to the disease, we universally find it in Boutan more common with the women than men."

ease might have proceeded. About three or four miles to the east of Onondago, there is a brook the waters of which are said to occasion great swellings of the necks of men, of women, and even of sheep. The water of this brook is, certainly, highly impregnated with lime-stone, to which the mischief is ascribed. In this country, it is customary to turn out the sheep to graze upon the Beech and Maple lands, that is, lands whose principal large vegetables or timber are the Beech*, and different kinds of Maple†. The sheep, being thus set at liberty, have an opportunity of going to the brook which I have mentioned, where great numbers of them, it is supposed from drinking the water, become afflicted with large swellings of their necks. These swellings have not, hitherto, been observed to be attended with much inconvenience to the sheep, and it is worthy of observation, that in the winter-season, they subside, or leave them. I was informed, that neither horses nor cows have been observed to be affected with similar swellings, from this or other brooks. But Mr. James Geddis, whom I have already mentioned, has lately assured me, that both sheep and horned cattle are subject to this disease. “ It is apt, he says, to be fatal to calves and lambs.” “ In Manlius, says the same

* *Fagus ferruginea* of Aiton.

† *Acer saccharinum*, or Sugar-Maple, &c.

gentleman, I have lately seen a sheep with a very large neck. She was fattening for the butcher, as she had always lost her lambs by this disorder*.”

It is not a new observation, that other animals, besides the human kind, are afflicted with the disease of goitre. Mr. Coxe informs us, that in some parts of Switzerland, even the dogs are subject to “goitrous tumours,” as he calls them†.



I wish it were in my power to ascertain, with absolute certainty, the actual extent of country in which this disease prevails. If this could be done, it would be a matter of much importance. It would enable us to speculate with more confidence concerning its origin, or cause. Knowing the limits of the disease, it would principally be necessary to ascertain, what are the peculiarities in the climate, the soil, and the waters of the country. But we have, as yet, ascertained little on this subject except the existence of the disease. Almost every thing valuable respecting it remains to be discovered. I have given the hint. I am anxious

* Letter to me, dated Onondago-lake, November 16th, 1798.

† Travels in Switzerland, in a Series of Letters to William Melmoth, Esq. Vol. I. p. 349. Dublin: 1789. Octavo.

that it should be pursued by those who enjoy more extensive opportunities of observing the disease.

IN the meanwhile, it may not be altogether useless to give a rude view of the range of the goitre in the state of New-York. I mean its range from east to west. Of its extent from north to south I can say nothing that deserves attention.

I FIND the disease in the vicinity of Old-Fort-Schuyler, about twenty miles from the head of the Mohock-River. Here, indeed, we observe some of the worst cases of it*. It is not uncommon at Fort-Herkemer, on the German-Flats; at Fort-Dayton; and at Henderson-town, as already mentioned. I am assured, that it has never been seen quite as low down the Mohock as the Little-Falls of this river, about fifty-six miles west of Albany. It is unknown at Schenectady, except by name.

FROM this view of the subject, we may, perhaps, for the present, fix upon the Little-Falls of the Mohock, as the utmost limit, towards the east (I mean along the river), of this disease. From the vicinity of the Falls to the village of Old-Fort-Schuyler, it appears to prevail more or less; and from this place, westward and south-westward, through a consider-

* See page 8.

able extent of country, as at Brother-town, Oneida, Canafaraga*, Onondago, and in other parts of the military district, to within a few miles of the eastern banks of the Cayuga-Lake.

AT Geneva, which is situated on the banks of the Canada-Saga, or Seneca-Lake, I could not find that any instances of the goitre have been observed. A physician†, who resides in this town, knew nothing of the complaint: nor has it, to my knowledge, been observed in any part of the country immediately adjacent to the lake. I did not hear of the disease in my progress, westward, through the Jenisseia-country. But an Indian, of the Wunaumeeh tribe, has informed me, that he has seen several cases of it among the Seneca and other Indians, who inhabit the rich flats along the banks of the Jenisseia-river. I think I can depend upon the information of this Indian, who is an intelligent man. From the Jenisseia, westwardly, to the outlet of lake Erie, the country is, in a great measure, a wilderness, being inhabited, or rather wandered over, by a few Indian families. Of course, it is not easy to say, whether this latter district contains much of the materials of the disease. This will be af-

* Canafaraga is a small Indian village, about thirty-two miles, south-west, from Old-Fort-Schuyler, and eleven miles, south-west, from Oneida.

† Dr. Goodwin.

certained in the future population of the country. Meanwhile, I shall observe, that there are some cases of goitre among the Tuscaroras, who are settled near the utmost western verge of New-York, about ten miles from the Falls of Niagara.

THUS, we are already in possession of facts which evidently show, that the disease of goitre has an extensive range in the state of New-York. Future inquiries will, I doubt not, discover the disease in many other parts of this country, in which I have neither seen nor heard of it. I have already hinted, and shall now proceed to show, that it is not exclusively confined to the state of New-York, but that it is a common complaint in various other parts of our continent.

CASES of the goitre have been observed in different parts of Lower-Canada, particularly in the low and marshy grounds, between St. John's and Montreal.

THE disease is also known in the state of New-Hampshire, on the Connecticut-river. In this part of the country, as well as in New-York, it is called the "swelled neck." It is said to be much less common now than it was twenty or twenty-two years ago.

A GENTLEMAN, whom I met with in my journey through New-York, informed me, that the goitre is not uncommon in the county of Bennington, and state of Vermont*.

MR. James Geddis informs me, that this disorder “prevails” in the Cohos-country, in Connecticut, where, from all he can learn, it never affects men†.

WE are in possession of more information concerning the existence of the goitre within the limits of Pennsylvania. Having been informed that this disease has been observed at Pittsburgh, and in other parts of the western country, I wrote to my friend Dr. George Stevenson, of Pittsburgh, on the subject. I here give a part of the information which he has communicated to me‡.

“CASES of goitre are met with among the inhabitants on the waters of the Allegheny and French-Creek, and at Sandusky; a few instances on Monongahela, and at this place, where, out of 1400 inhabitants, there are not less than 150 persons who have it.

* This county is situated in the south-west corner of Vermont, where it borders on the state of New-York.

† Letter to me, already referred to. See page 11. Note.

‡ In a letter, dated Pittsburgh, January 4th, 1798.

“ IT is common to the natives and persons lately settled at those places, affecting both sexes, especially females, and children even at the age of 18 months.

“ THE swelling appears on either side of the neck, or in front; sometimes it is an uniform enlargement of the neck, evidently increasing in winter, and sometimes decreasing in summer.”

IT does not appear from Dr. Stevenson's letter, that the disease has, in any instances, arisen to a very troublesome or alarming height. The doctor, however, informs me, that some of the patients are not unwilling to apply for relief, though little has, hitherto, been done for their benefit*.

THE goitre is extremely common among the inhabitants on French-Creek, one of the principal branches of the Allegheny-river. It is there almost entirely confined to females.

MY very intelligent and worthy friend, Mr. John Heckewelder, informs me, that he has observed the goitre among the Indians, living on Big-

* During the winter of 1796—1797, the late Dr. P——s visited Pittsburgh. Several ladies, with swelled *necks*, applied to him, and, it may be presumed, that the metallick tractors had a very fair trial: but they would not succeed in *this complaint*!

Beaver-Creek, and on the river Muskingum*. It was principally confined to the "women and girls." "With some, says he, as they grew up, the complaint increased; with others (especially where a remedy was applied) it wore away again, though there are few that think much of it." In the summer of 1797, "I saw, says Mr. Heckewelder, two women, whom I knew when girls at the age of ten or twelve years, and in whom this swelling had then begun; now (1797) with such necks that it surprized me. This swelling with one projected even before her chin. I asked one of them, whether she had never made use of any remedy to cure her. She said, she had applied burnt and powdered muscle-shells, but to no effect. She felt no pain, she said; and was the mother of two children†."

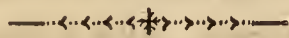
THERE are several cases of the disease among the Canadians who are settled at Detroit. It is principally confined to women, and is there thought to be owing to the drinking of the waters of the

* Big-Beaver-Creek, commonly called Big-Beaver, is a pretty considerable branch of the Ohio, into which it empties itself, on the north side, about twenty-nine miles below Pittsburgh. Muskingum is a more considerable branch, which falls into the Ohio, on the same side, about one hundred and sixty miles below Pittsburgh.

† Letters to me, dated Bethlehem, December 2d, 1797, and January 13th, 1798.

lakes. It is also known at St. Vincennes, on the river Wabash, about one hundred and fifty miles above the entrance of this river into the Ohio.

IN the present very imperfect state of our knowledge of the goitre of North-America, these few notices concerning the spread of the disease through our country will not be deemed unacceptable to the curious reader. They will assist him in investigating the cause of the disease, a subject of great importance, to which I will now turn my attention.



S E C T I O N II.



OF THE CAUSE OF THE GOITRE.



IN entering upon this subject, I think it proper to observe, that wherever I travelled, in the state of New-York, the people to whom the disease was known, ascribed it to the water of the country*. I do not mention this as a *proof* that the water is, in any manner, concerned in the production of the

* It is but just to mention, in this place, that my friend, Mr. Geddis, thinks it "very problematical" that this disease is occasioned by the water. Letter to me.

disease: for the great mass of the people of a country are seldom remarkable for a talent of discovering the connection between physical causes and effects. But this opinion is entitled to a careful examination; because several facts may be adduced in support of it; and because some respectable European philosophers have attributed the goitre of Europe to the drinking of water, impregnated with certain terrestrial matters. The ingenious Mr. De Luc, in particular, has espoused this notion. He says, that the waters that are used by the people of the Alps, although to the eye they appear clear and pure, are nevertheless highly impregnated with terrestrial matters. He imagines that these matters are circulated into the affected parts, where they obstruct the vessels, forming a kind of *tophus*, or crust, and thus give rise to the disease*. Mr. Coxe, in his interesting *Travels in Switzerland*, without mentioning De Luc, also supposes that the calcareous matter called *tuf* is the cause of the disease. “During my travels through Europe, says this intelligent writer, I never failed to observe that *tuf*, or this calcareous deposition, abounds in all those districts wherein goiters are common. I noticed goitrous persons and much *tuf* in Derbyshire, in various parts of the Vallais, in the Valteline, at Lucerne, Friburgh,

* I am obliged to quote Mr. De Luc's opinion from memory

and Berne, near Aigle and Bex, in several places of the Pays de Vaud, near Dresden, in the vallies of Savoy and Piedmont, near Turin and Milan.

“ To descend, continues our author, to particular instances. The inhabitants of Friburgh, Berne, and Lucerne, are much subject to guttural excrescences. With respect to Friburgh, I observed that one of the principal springs which supplies the town with water, issues from a neighbouring stone-quarry, and has formed large depositions of *tuf* on the rock from which it bubbles. The pipes, also, which convey water to the public fountains at Berne, are extremely charged with the same calcareous sediment; and a gentleman, on whose veracity I can depend, assured me, that he is subject to a small swelling in the throat, which usually increases in winter, when he is chiefly resident at Berne, and diminishes in summer, on his removal to other places, where the waters are not loaded with *tuf*.

“ I WAS, moreover, informed by General Pfiffer, that at Lucerne all the waters, excepting one spring, are impregnated with *tuf*, and that the natives, who dwell near that spring, are much less subject to goiters than the other inhabitants; that the same difference is observed among the members of the same family, between those who drink no water but what is drawn from that spring, and the others who

do not use that precaution. The General shewed me also the tin vessel, in which water was every morning boiled for his use, and which was so speedily and thickly incrustated as to render it necessary to have it cleansed twice a week. The water which yields this deposition, is as transparent as crystal.

“ I MAY add likewise, that I visited many places which border upon those districts wherein goiters and *tuf* are frequent, and which have precisely the same situation and climate, yet whose inhabitants were not goitrous, and where I did not observe any appearance of *tuf**.”

BESIDES Mr. De Luc and Mr. Coxe, several other writers are of opinion, that the goitre of Europe is occasioned by the drinking of water impregnated with lime, selenite (or gypsum), and other forms of calcareous earth. Nay, some of these writers have even imagined, that the disease owes its origin to an atmosphere, impregnated with these terrestrial matters. This last opinion does not appear to me to be worthy of a serious notice. But the former is now to be examined.

I HAVE already observed, that wherever I travelled, in the state of New-York, the inhabitants, ac-

* Travels, &c. Vol. I. p 347, 348, 349.

quainted with the disease, ascribed the goitre to the water of the country. Some of the more intelligent people conceived it owing to an impregnation of this water with a tuf, or calcareous matter. They asserted, that wherever the disease was seen such calcareous waters abounded. I heard much of a certain brook, a few miles east of Onondago, which has the character of producing considerable swellings of the necks of men, women, and sheep. This is a strong limestone-water*.

IN Manlius, I was assured, that some of the waters, which are thought to occasion the disease, are so strongly impregnated with limestone, that they often deposit it in the state of a mortar (as to consistence) in the depressions, &c. of the ground, where these waters have run†. I had not an opportunity of seeing any proofs of this assertion. But I did not doubt the veracity of my informant; because I knew that water, besides dissolving a certain

* See page 13.

† Some of the springs in the Onondago-Valley are so strongly impregnated with limestone, that they incrust the leaves, among which they run, so firmly with the earthly matter, that the winter's frost has no effect in breaking the crust, which continues as hard as a rock. In general, the incrustations that are formed by our petrifying waters do not resist the severity of winter, but are crumbled into a fine powder, which contributes not a little to enrich the soil, in many parts of the United-States. This is particularly observed upon several of the branches of the river Potomak, in Virginia.

quantity of limestone, might hold in diffusion a very large portion of this earth, sufficient to deprive it of its transparency, and to give it a great increase of specifick gravity. Moreover, in my passage through the western parts of the state of New-York, my attention was often solicited by an unusual aspect of a great deal of the limestone. It was less solid than what I had been accustomed to see in other parts of the country, and appeared evidently to have been formed, at no very remote period, by a deposition from water.

IN the vicinity of Brother-town, and in other parts of the country in which the goitre prevails, it is common to find the pebbles and stones in the brooks incrusted with a calcareous covering. I possess some pebbles of this kind that were collected at Brother-town, and shown to me, as a proof of this theory, by a physician†, whom I accidentally met there.

THESE facts may seem to favour the notion, that the goitre of our country is owing to the terrestrial matters which I have mentioned. The supporters of this notion will, doubtless, be pleased to learn, that in several of those parts of North-America where the disease prevails, we discover a great abun-

† Dr. Hopkins.

dance of those very materials to which Mr. Coxe and other writers have attributed the goitre and cretinism of Europe. But this theory appears to me to be the result of a very limited view of the subject. Indeed, I cannot help observing, that most of the writers on goitre have been contented, in assigning a cause for the complaint, to take a very narrow view of the question. I am far from supposing, that my attempt towards an investigation of the cause of the disease will exempt me from that censure, which I have applied to others.

IN contemplating the *calcareous* theory of goitre, two obvious questions will occur to every intelligent reader. These questions are worthy of being stated, and of an attentive consideration.

FIRST. It is natural to inquire, whether we discover limestone in all those parts of the United-States in which the goitre has been observed? I am not prepared to answer this question as fully as I could wish. Some facts, however, I have collected, and they are now to be mentioned. Mr. Heckewelder, whom I have already quoted, assures me, that he has observed this disease among the Indians in the western country, “where there was not a limestone to be seen†.” At Pittsburgh, where

† Letter to me, dated December 2d, 1797.

there is but little limestone, the disease is common*. There is no limestone in the county of Bennington, where, I have already said, the goitre is not uncommon†. The disease is known at Fort-Dayton, where, I am informed, no limestone has hitherto been discovered. Mr. Coxe positively asserts, “that wherever there are goiters there is tuff-stone‡.” This, with respect to the countries of Europe in which he has observed this disease, may *possibly* be true: but the instances just mentioned, and I doubt not that in time we shall be able to adduce many more of a similar kind, are sufficient to show, that in North-America, there is not an *obvious* necessary connection between the goitre and calcareous waters.

BUT even in Europe, Mr. Coxe’s observation will not, I believe, be found to hold so universally true as this gentleman has imagined. Mr. Foderé, who has lately published a very interesting work on *Goitre and on Cretinism*, remarks, that the waters of Maurienne, where this disease prevails to a very great degree, are much less impregnated with cal-

* “Limestone here is scarce, of a bad quality, and when calcined has the appearance of ashes.” Dr. Stevenson. Letter to me, dated Pittsburgh, January 4th, 1798.

† See page 18. The water of this county is said to be remarkably good.

‡ Travels, &c. Vol. I. p. 349.

careous matters than those of the higher countries, where it is less common*.

SECONDLY. If water impregnated with calcareous earth be the cause of the goitre, why, it may naturally be asked, is not this disease more generally, or even constantly, met with in those parts of our country, in which calcareous strata, and calcareous waters, abound?

I BELIEVE it may be said, with a good deal of confidence, that there are few parts of the world more abundant with limestone, and other forms of calcareous earth, than many extensive portions of the United-States. It is not my business, in this place, to exhibit a minute view of the diffusion of this earth through one country. This will be done in a work† in which I am now engaged. At present, it will be sufficient to say, that the disease of goitre is entirely unknown in some of the most calcareous parts of the country. In the county of Lancaster‡,

* *Essai sur le Goitre et le Crétinage, &c.* Turin : 1792. 8vo. I exceedingly regret that I have not had an opportunity of consulting this work, of which, however, I have been so fortunate as to procure a copious analysis, in the *Medicinishe Bibliothek* of Professor Blumenbach. See Dritten Bandes, viertes Stuck. Gottingen, 1795.

† Travels through part of Pennsylvania, Virginia, New-York, &c, &c.

‡ In Pennsylvania.

calcareous earth is the predominant stone. It is spread upon the surface, and is found to be the prevailing stratum at the depth to which wells, &c. are dug. The water of this county is, in general, of that kind which we call *hard*. It is so strongly impregnated with limestone, that it is common to find the wooden troughs, through which the water of meadows, &c. is conveyed, incrusted with the earth; and a similar incrustation is frequently found formed over the whole internal surface of the tea-kettles, &c. in which water has been boiled. In some parts of the county of Dauphin*, particularly in the neighbourhood of Harrisburgh, and along the Swatara above Middletown, there are immense collections of limestone. At Bethlehem, at Easton, and other places in the county of Northampton, the prevailing stone is limestone; and water impregnated with this earth is the common drink of the inhabitants. *But in none of these places is the disease of goitre seen.* And here we should expect to find it, as the counties which I have just mentioned are some of the most thickly settled of any in the United-States.

I do not assert, that these arguments are conclusive in disproving the calcareous origin of goitre. But, I presume, it will not be denied, that they

* In Pennsylvania.

have their weight. On the one hand, we have seen, that there is little or no limestone, or any other species of calcareous earth, in several of those parts of our country where the goitre prevails. On the other hand, the goitre is entirely unknown in some of the most calcareous districts of America.

MR. COXE observes, that “ although it appears that wherever there are goiters there is tuff-stone; yet the reverse is by no means true, that wherever the waters deposit tuff, there are *always* goiters. For perhaps the natives do not drink of the springs which are loaded with tuff; or that substance is not sufficiently dissolved in the waters; absolute solution being, perhaps, necessary to produce these swellings*.” On this passage, I shall only observe, that it is certain, that in many parts of the United-States, as in the county of Lancaster, there are no cases of goitre, although the inhabitants do *drink* the waters, which hold in *solution* a considerable quantity of calcareous earth, these American waters being, like those mentioned by Mr. Coxe, “ as transparent as crystal.”

It remains for me to mention another argument in support of the notion that this disease owes its origin to calcareous earth. Mr. Coxe calls it “ the

* Travels, &c. Vol. I. p. 349. Note.

strongest proof, in favour of this opinion.” “ A surgeon, whom I met at the Baths of Leuk, informed me, says the traveller, that he had not unfrequently extracted concretions of *tuf-stone* from several goiters; and that from one in particular, which suppurated, he had taken several flat pieces, each about half an inch long. He added, that the same substance is found in the stomachs of cows, and in the goitrous tumours to which even the dogs of the country are subject*.”

It is not necessary to call in question the veracity of this surgeon. Several very respectable writers have found similar matters in the thyroid gland. Haller found cysts enveloped with a firm cartilaginous covering, bony concretions†, &c. Morgagni, to whose invaluable work I must refer the reader, who is desirous of obtaining a great deal of interesting information concerning the diseases of this gland, sums up, in a few words, the experience of various writers; “ that most of them met with hard bodies of a cartilaginous, bony, or stony

* Travels, &c. Vol. I. p. 349.

† “ Vidi in glandula thyreoidea cystides, etiam cartilagineo velamento firmatas, & effusum fabulum, alias ossæ concrementa in glandula dispersa, partemque glandulæ in pinguis lardi speciem degenerem.” *Elementa Physiologiæ Corporis Humani. Tomus Tertius. p. 400. Laufannæ, 1766.*

nature, and sometimes even found the gland itself become bony, or of a stony nature*.”

THE existence of calcareous matters in the thyroid gland of goiters does not appear to me to be a proof, that the disease which I am considering is, in any degree, owing to the drinking of water impregnated with this earth. Such matters are very frequently found in other parts of the bodies of persons who, perhaps, had never been accustomed to drink calcareous waters†. I may add, that Mr. Foderé did not find in any of the tumours which he examined any thing like this earth.

FROM the various facts and objections which I have stated, I am compelled to reject the system which ascribes the disease of goitre to the use of water impregnated with calcareous earth. I must confess, however, that until I came to take a nearer and more minute view of the subject, the system did not appear to me an implausible one. Some of the facts related by Mr. Coxe seemed almost to car-

* The Seats and Causes of Diseases investigated by Anatomy, &c. Vol. III. Letter L. Articles 30, 31, 32, 33, 34, 35, 36, and 37. English translation. London, 1769.

† Whilst I was a student of medicine, in the University of Pennsylvania, I dissected, at the anatomical theatre, the body of an old emaciated woman, whose lungs were full of pieces of calcareous earth. Similar appearances have been discovered by Morton, Curtius, Fernelius, Francus, Morgagni, and many other writers. See Appendix.

ry conviction along with them,—as to the cause of the disease in Europe. The facts mentioned to the traveller by the gentleman whose goitre commonly increased while he resided at Berne, and those mentioned by General Pfiffer, are peculiarly striking*. Some of my readers will not, therefore, be surprised to learn, that I once adopted Mr. Coxe's notion, especially when I found, that the waters of those parts of the state of New-York, in which I first became acquainted with the goitre, are strongly impregnated with calcareous earth. But I now take my leave of this system, and proceed to the consideration of some others, which have, at different times, been proposed by writers to account for the origin of the disease.



WHILE it appears improbable to me, that calcareous earth is the cause of the goitre, I am even inclined to doubt, whether this complaint is, in any manner, occasioned by the drinking of the water of the countries in which it is observed to prevail. Dr. Haller, before me, seems to have entertained a similar skepticism. The following are this great physiologist's words: "*Nulla in Helvetia vallis est, quae suo rivo careat, nullus fere pagus, quem vivi aquarum fontes non reddant laetiozem. Vix noti*

* See pages 23 and 24.

putei, nisi paucissimis locis, ubi nulla declivitas est. Quare neque credo ab aquarum vitio strumas nasci. Etsi enim in Valesia incolae lutosas aquas bibunt, Bernae tamen purissimae sunt, neque ideo strumae in utroque sexu infrequentes*.” Thus it appears, that although the disease is known in Valais, where the inhabitants drink waters impregnated with terrestrial matters, it is also known, and not uncommon, at Berne, where the waters are very pure†.

I MUST not conceal, that the water of that part of the state of New-York in which I have observed the goiter to prevail, besides holding in solution and diffusion a portion of calcareous earth, appeared to be otherwise very impure, and was certainly unpleasant to the taste. In the military township of Pompey‡, the water is so disagreeable, that many of the inhabitants have supposed it to be the cause of a malignant bilious fever, called the

* Alberti v. Haller Historia Stirpium Indigenarum Helvetiae Inchoata. Tomus Primus. Præfatio, p. vi, vii. Bernæ, 1768. Folio.

† It is worthy of observation, that Dr. Haller and Mr. Coxe differ in their assertions respecting the water of Berne. The first of these writers asserts, that it is very pure, whereas Mr. Coxe says, that the pipes which convey water to the public fountains at Berne are extremely charged with a calcareous sediment. See page 23. On this subject, Mr. Coxe appears to have been better informed than the great Swiss philosopher.

‡ In the county of Onondago.

“ yellow water,” which has carried off many of their horses. I suspect that a chemical analysis of some of these waters will show, that they hold in solution a considerable portion of gypsum; whilst others hold in diffusion a portion of sulphur. Both gypsum and sulphur are very abundant in several parts of the state of New-York: the former, in particular, abounds in some of those very parts of the country in which the goitre is a common complaint.

THE following fact, communicated to me by Dr. Stevenfon, will, perhaps, be thought to have some weight in disproving the notion, that the goitre is owing to the water used as drink by the inhabitants. “ Formerly the inhabitants of Pittsburgh drank the waters of the neighbouring rivers*: of late, well-water only is in use. The increase of inhabitants considered, the disease is not more frequent than formerly†.”



THE goitre has often been ascribed to the use of snow-water, used as a drink. But there can be very little foundation for this idea, though it has been supported by several respectable writers. It is

* The Allegheny and Monongahela.

† Letter to me, already referred to.

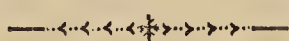
certain, at least, that the inhabitants of the island of Sumatra are greatly afflicted with this disease, and yet no snow ever falls in that island. On the contrary, the disease has never been seen in Greenland, though in that inhospitable portion of the earth, snow-water is the common drink of the inhabitants. The respectable Dr. Watson observes, that he never met with a case of the complaint, in the county of Westmoreland, in England, “where there are higher mountains and more snow than in Derbyshire, in which county the complaint is very common*.”

LINNÆUS tells us, that this disease is entirely unknown in Lapland, where, it is unnecessary to observe, water in which snow has been dissolved must often, and very largely, be drunk. In his beautiful apostrophe on the happiness of the Laplanders, the immortal Swede considers their exemption from goitre, as one of their felicities. “Tuus potus, says he, aqua crystallinæ pelluciditatis, quæ nec cerebrum infania adficit, nec strumas in Alpibus tuis producit†.”

* Chemical Essays. Vol. II. p. 158. London, 1787.

† Flora Lapponica. I quote the passage from memory. Here I may observe, that tuf, supposed by Mr. Coxe to produce goitre, is common in Lapland. Speaking of this substance (the Tophus Ludus of Linnæus), the Swedish naturalist says, “*Habitat in littoribus fluviorum glareoso-argillaceis Lapponiae, Dalekarliae, aliisque.*” Systema Naturæ, &c. Tomus III. p. 186. Vindobonæ, 1770. See Appendix.

It would be easy to adduce instances of many other countries, the inhabitants of which drink snow-water, although the disease of goitre is entirely unknown among them. But, perhaps, it is not necessary to pursue the subject any farther. Some other objections to this theory will, however, be taken notice of immediately.



A LATE writer, Dr. Gautieri, considers “ exposure to cold, and the drinking of very cold water,” as “ a principal cause” of the goitre. He remarks, that all the waters used by the people of Stiria and Carinthia, who are subject to this disease, “ are those which flow down the sides of the mountains, the tops of which being perpetually covered with snow, render those streams of an excessive degree of coldness.” Dr. Gautieri entirely rejects the bad qualities of the snow-water as productive of this disease, “ any further than as it operates by its coldness simply*.”

MR. George Forster says, that during his voyage round the world with Captain Cook, in the year

* Tyrolensium Carynthiorum, Styriorumque Struma. A Josepho Gautieri, M. D. Observata et Descripta. Vindobonæ, 1794. I have not seen this work, and know nothing of it but what I learn from an analysis of it in The Medical and Chirurgical Review, &c. Vol. I. p. 377—387. London: 1795.

1773, the greater part of the crew having drunk of the water that was procured by melting ice, were affected “ with swellings in the glands of the throat.” “ Water (says this ingenious writer) melted from snow or ice, is known always to have this effect, and the constant use of it in mountainous countries produces those enormous wens (*goîtres*) which are common among Alpine nations.” Forster attributes the effects produced by the water to its having lost its fixed air*.

My objections to the systems of Dr. Gautieri and Mr. Forster may easily be collected from what has already been said. The disease is common in Sumatra, and some other hot countries, where no snow or ice water is ever seen. Mr. Forster is, moreover, greatly mistaken in asserting, that water melted from snow or ice is known “ always” to produce goitre; for this disease is unknown in some of those countries where, to use the words of Haller, an “ *æterna glacies†*” prevails.

THESE objections, then, are decisive. They most plainly demonstrate, that neither snow-water, nor any other water of an extreme degree of coldness, is the cause of the disease. In addition to these facts,

* A Voyage round the World, &c. Vol. I. p. 107, 108. London, 1777. 4to.

† “ *Æternæ glaciei moles.*”

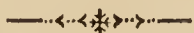
I may remark, on the authority of Mr. Foderé, that it is observable, in Maurienne, that the goitre is entirely unknown among the people who drink the water, near its source, on the mountains, whereas it is common among those who drink the same water as it flows downwards, and becomes more like spring-water*.

MR. Foderé likewise remarks, that the goitrous tumour commonly increases in summer, and decreases in winter, especially if the weather, in this latter season, be dry instead of moist*. This observation, which, certainly, goes some way to prove, that the disease is not occasioned by the drinking of cold water, is perfectly agreeable to one which I have already made, in a former part of this memoir; that the goitre of New-York has frequently been observed to subside or lessen during the winter season; and, in particular, that, at this time, the swellings of the necks of sheep subside or leave them†.

* Effai, &c.

† See page 13. The question concerning the increase and decrease of goitre, in cold or warm weather, is one of consequence, and has not been sufficiently attended to. The coincidence between Mr. Foderé's observation and that of the people in the state of New-York is striking. I do not find, that Dr. Gautieri, who ascribes so much to the influence of cold air and very cold water, has said any thing on the subject. Dr. Stevenson's remark must not be forgotten. This gentleman says (see page 19), that the goitre at Pittsburgh "evidently" increases in winter, and "sometimes" decreases in summer.

I do not, by these observations, mean to deny, that glandular swellings are often induced by cold. This is a fact which is familiar to every physician. The fact related by Mr. Forster, and already quoted*, is a striking one. I have, more than once, experienced, in the summer-season, a considerable swelling of the glands of my throat, a very short time after eating a pernicious luxury, which has come into very general use in our city. I mean ice-creams. But neither in this case, nor in the instances related by Mr. Forster, was there any evidence that the thyroid gland was especially, or at all, affected. The swelling (in my case, at least) appears to have been principally confined to the internal tonsils.



It is the opinion of some persons, with whom I have conversed on the subject, that the disease of goitre is occasioned by the drinking of water supplied by springs near beds of fossil-coal. This theory has been the result of very partial observation. The disease is common at Pittsburgh, where coal abounds. But there are many extensive coal-countries of America, in which this disease has not been observed. I may say the same of Europe. On the contrary, the goitre has an extensive range in

* See page 39.

that part of the state of New-York in which no coal has ever been discovered.



MR. Saunders, who has given some account of the goitre of the country of Boutan, informs us, that “on finding the vegetable productions of Boutan the same as those of the Alps, in almost every instance, it occurred to him, that the disease might arise from an impregnation of the water by these plants, or the soil probably possessing similar qualities, the spontaneous productions of both countries, with very few exceptions, being so nearly alike*.”

I COULD adduce but one argument (if indeed it were one), that the goitre of our country (I particularly mean of the state of New-York) is owing to an impregnation of the waters by certain vegetables. It is this, that in that tract of the country where the goitre prevails, there are many of the plants of those alpine countries of Europe, in which the same disease has been observed. But on this subject a general remark may be made: that as we approach the northern parts of our continent we find a great many of the plants of northern Europe. This fact may seem to favour the notion which I have mentioned. But here I must observe,

* Philosophical Transactions, for the year 1789. Part First.

that we do not find the goitre in many of those parts of our country in which the botanist discovers the plants of Europe, in the greatest abundance*.



I do not know whether it is very important to observe, that some of our Indians imagine, that the goitre is produced by certain insects inhabiting the water, which they drink. There was a time, during the reign of what might be called the ANIMALCULAR SYSTEM, when a fact or notion such as this would have been greedily caught at by some ingenious man; by a Bonomo, a Calvoli, or a Linnæus.



A COARSE and unwholesome food has been assigned as one of the causes of the goitre. Among other articles, chestnuts have been particularly accused of favouring the disease. Dr. Gautieri remarks, that these nuts are produced in great plenty among the Tyrolese (where the goitre is a common complaint), and are eaten by the poorer inhabitants, with great avidity. Children, he tells us, are observed, in swarms, surrounding the trees, greedily devouring both the ripe and the unripe fruit. The natives make the nuts into puddings, which are very disagreeable to strangers, but are much relished

* See Appendix.

by the people themselves*. “ Hogs flesh is much sought after amongst them, but this is taken in such a dry, hardened, state that it can scarcely afford wholesome nourishment. They greedily devour the fat of the meat, and that without any condiment, not even salt, which might render its digestion more easy. Thus the worst kind of food, and prepared in the worst manner, without any regard to cleanliness, the use of wine of a bad quality, and drinking spirituous liquors to excess, afford ample cause for a vitiation of the whole habit†.”

It is not, at all, improbable, that a coarse, or rather unwholesome, food may predispose the system to goitre. But there is no reason to suppose, that such food is capable of producing the disease. Whole nations of mankind subsist upon a diet as crude and as unwholesome as that of the Tyrolese, without ever experiencing the disease. On this subject Mr. Foderé has favoured us with an observation, which is peculiarly striking. He tells us, that no food can be coarser than that which is used by the people of the mountains, where the goitre is unknown, and none richer and better than that of the rich of the cities in the vallies, who are nevertheless afflicted with the disease‡.

* See Appendix.

† The Medical and Chirurgical Review, &c. p. 385, 386.

‡ Effai, &c.

IN our own country, there does not appear to be any necessary or obvious connection between the goitre and the nature of the food of those who labour under this complaint. For although the disease is not uncommon, in several parts of the country, among the Indians, who occasionally labour under a deficiency of good food, yet I do not know, that it is more common among these savages than among the whites (inhabiting the same tract of country), who, pursuing the business of agriculture, have at all times an abundance of sound and nourishing aliment. I may add, that the disease is entirely unknown among some of those Indian tribes who more frequently labour under a scarcity of food than any of the other tribes of our continent.



I PROCEED to the consideration of some other supposed causes of goitre.

DR. Gautieri is of opinion, that one of the “exciting” causes of this disease is the custom which the common people have “of drawing carriages like cattle up the hills, which they do by cords placed over the superior part of the thorax. By the pressure they occasion, and by the frequent impediments to respiration, the blood is prevented from returning with freedom by the jugular vein*.”

* The Medical and Chirurgical Review, &c. p. 386.

THE opinion of Dr. Gautieri receives considerable support from a fact communicated to me by Mr. Heckewelder. This gentleman, who has seen a good many cases of the goitre among the Indians, particularly the women and girls, in the western country, ascribes the complaint to the heavy burdens which they carry, “ bearing all the weight they have on the back, by a band which is fixed at their forehead. I have taken notice, says he, when it first made its appearance in girls, which was never until they were employed in carrying burdens*. The men generally carry their burdens with a band fixed at their breast, wherefore they are not so subject to this disease.†”

THESE facts are interesting. They seem to render it highly probable, that the goitre, or at least some species of bronchocele, may be occasioned by simple pressure, producing an impediment to a free and regular respiration. Whether the disease thus produced be the *true* goitre, I will not pretend to determine. It is, most probably, that species of bronchocele which Sauvages, after Roncallus, calls *Bronchocele ventosa*†.

OTHER causes, considerably similar to the one

* See Appendix.

† Letter to me, dated Bethlehem, December 2d, 1797.

just mentioned, have been assigned for the production of goitre, or a tumour of the thyroid gland. It was the opinion of Andreas Pasta, one of the pupils of Morgagni, that the reason why women are more subject than men to the Bronchocele Botium, is this, that a debility is induced in the thyroid gland, in consequence of the frequent vomitings to which the sex is liable, during the period of their pregnancy*. Lalouette, a French writer, says, that the thyroid gland is frequently affected with aerial tumours, which he ascribes to the throes of women in labour. In this case, he imagines, that the air is forced from the trachea into the cellular texture of the gland. Haller, from whom I quote what I have just said, does not dispute the theory of Lalouette. The great physiologist informs us, that Theophilus de Bordeu inflated the thyroid gland from little orifices above, or immediately in, the first ring of the bronchia, and by a very small duct; and that he also introduced bristles through these passages†.

* See page 2.

† “ Addi potest, frequentes tumores aereos in glandula thyreoidea a nixu parturientium oriri, qui cellulofam telam distendant, manifesto argumento, vias esse ex aspera arteria, per quas aer in thyreoideam glandulam exeat, eoque, & in laryngis ventriculos liquidum glandulæ per lymphaticâ vasa effundi posse suspicatur vir cl. (Lalouette). Sunt denique super primum bronchi anulum ostiola, aut in ipso primo anulo, & minimus ductus, per quas vias *Theophilus* de Bordeu glandulam thyreoideam inflavit, & per quas fetus immisit.” *Elementa Physiologiæ Corporis Humani. Tomus Tertius.* p. 398 & 399.

MR. Foderé remarks, that during pregnancy, the goitre will easily arise, often suddenly, becoming painful, and seldom disappearing, unless due attention is paid to the complaint, particularly in a country or district where it is endemial. Our author does not doubt that, in these cases, air is the cause of the disease. This, he thinks, is proved by the suddenness of the swellings, which often arise after passions of the mind, when breathing, as well as in the case of pregnancy, is impeded. Tumours from these causes are not, according to Mr. Foderé, exclusively confined to the thyroid gland, but also affect the neighbouring parts*.

THE theory of these aerial tumours of the thyroid gland seems, at present, to be more easy of explanation than formerly. Late inquiries appear to have more completely established the fact, that there is an immediate communication between this gland and the larynx. Mr. Foderé blew air into a larynx, which had been well cleansed, and soaked a while in water, and secured by a ligature below. In consequence of this, the thyroid gland swelled up. He also found, that on filling a larynx with spirit of wine, the smell of the liquor was plainly perceived in the thyroid gland*.

* Effai, &c.

SECTION III.



OF THE CAUSE OF THE GOITRE, CONTINUED.



THE learned and ingenious Mr. De Saussure has proposed a new theory of the cause of goitre and cretinism*. This gentleman's inquiries fully convinced him, that the goitre is not occasioned by melted snow or ice, nor by water impregnated with terrestrial matters, nor by drunkenness, coarse food, nor debauchery. After travelling along the greater part of the Alps, and directing his inquiries, with particular attention, to this interesting subject, he assures us, that he has not seen a single village subject to the disease, that was situated at a greater height above the level of the sea than five hundred or six hundred toises; that is, between three thousand two hundred, and three thousand eight hundred and forty English feet. He has never seen the disease in plains opened on all sides. He has ob-

* Mr. De Saussure treats of goitre and cretinism, as the same complaint. He allows, indeed, that many goitrous persons are not crétins, but he says, that all the crétins he has seen are affected with goitre. It is a circumstance well calculated to show that the goitre and idiotism are not necessarily connected with each other, that although the swelled neck is a common complaint in many parts of North-America, it is very rarely seen in connection with idiotism. See Appendix.

served that it is common in the narrow vallies, and that it generally ceases where the vallies terminating expand into open plains. He is, therefore, of opinion that the cause of the complaint, is to be sought for in some modification or condition which is exclusively confined to vallies but little elevated above the level of the sea. This modification, in the opinion of our author, is an heated and stagnated air, owing to the confined situation of the vallies.

SOME of the facts mentioned by Mr. De Saussure, and other facts which I have collected, give considerable weight to this theory. The Swiss philosopher observes, that generally, in pretty wide vallies, where there are houses on both sides of the valley, those villages that are situated on the side the most exposed to the sun, which receives his direct rays, and the heat reflected back from the rocks over them, are more subject to the disease than the villages which are exposed to the north. Thus, he observes, that the village of Branson*, which is situated opposite Martigny, contains a much greater number of crétins, because it is situated to the south, at the foot of a rock, from which circumstances, it is more liable to be heated than Martigny.

MR. DE SAUSSURE is aware, that the heat alone

* In the Vallais.

of the situation cannot be the sole cause of the disease, since the plains of many southern countries affected with a suffocating heat are not subject to it. He imagines, that the air which is confined in the vallies being much heated by the sun's beams, assumes a kind of corruption, the nature of which is not well understood by us. This hot and vitiated air, principally affects the tender fibres of children, producing that relaxation of the system, which appears to be a very general concomitant of the goitre and cretinism of the vallies of Switzerland, and which, in the opinion of our author, is the cause of the goitrous tumour, independently of any obstruction of the thyroid gland*.

It is a circumstance greatly in favour of Mr. De Saussure's theory, that the goitre, in almost every part of the world, seems to prevail in the valley-situation†. Thus, to confine my remarks, at present, to our own country, the disease is very common in the Onondago-Valley, in the state of New-York. This is a narrow and unwholesome valley. It is not uncommon in the vallies of the county of Bennington, in Vermont; and we have seen, that it

* Voyages dans les Alpes, &c. Par Horace-Bénédict De Saussure, Professeur de Philosophie dans l'Académie de Geneve. Tome II. p. 480, &c. A Neuchatel, 1779.

† See Appendix.

is very common at Pittsburgh. The situation of this last place is very similar to that of many of those parts of the old-world in which the disease prevails. It is a vale, or perhaps rather basin, entirely surrounded by hills, except at the three openings which are formed by the triangular junction of the rivers Allegheney and Monongahela. In other words, there is an opening, through the hills, down the Ohio, and one up each of the two other rivers. The openings on the Ohio and Monongahela are not greater than the breadth of the rivers. But that up the Allegheny is much more considerable, being near half a mile wide on each side of the river, near two miles in length on the west side, and five miles at least on the east side. The whole area of the basin is about a mile and a half in diameter from north to south, and one mile from east to west. The southern bank of the Monongahela, on the south side of the town, is a pretty considerable hill †, supposed to be between six and nine hundred feet high. The hills which surround the town, on the other sides, are more remote from it, broken more gradually into ridges, and sloping more away‡.

† Called the Coal-Hill, from the vast quantities of coal which it contains. See page 41.

‡ I am indebted to Mr. Hugh Brackenridge for this particular account of the situation of Pittsburgh. I take this opportunity of acknowledging my obligations to that gentleman for his kind attentions to the subject of

FROM this account, it is evident that the situation of the town of Pittsburgh is rather a confined one, and perhaps favourable to that heat and stagnation of air which, in the opinion of Mr. De Saussure, is especially concerned in the production of goitre and cretinism.

I WISH it were in my power to give a particular account of the situation of other parts of our country in which the goitre prevails. But upon this subject, my collection of facts is very scanty. The topographical history of the goitre must be much more complete, before we can ascertain, with certainty, the cause of the complaint. Meanwhile, the following facts deserve to be mentioned. They, at least, show, that the goitre is not exclusively confined to vallies, or to mountainous countries.

I HAVE already observed, that the goitre is a common complaint in the Military Tract, and in other parts, of the state of New-York*. In this part of the country, it is often met with in situations by no means entitled to the appellation of vallies. It is not uncommon at Fort-Herkemer on the German-

this memoir. I shall afterwards have occasion to avail myself of other information communicated to me by Mr. Brackenridge.

* See pages 6, 7, 8, 9, 14, 15, 16, 17, &c.

Flats*, a beautiful plain, or large piece of well-opened land, which is considerably elevated above the tide-water of the river Hudson.

THE goitre is a common complaint in different parts of the country north-west of the river Ohio, as upon the waters of Big-Beaver, Muskingum, Sioto†, and at Detroit‡. In none of these places, has it been observed to prevail in the vallies. Indeed, in the whole of the tract of country which I have just mentioned, there are no mountains, or considerable ridges sufficient to form vallies. I am acquainted with a good deal of the country that is watered by Big-Beaver. It is a flat or level country, abounding in savannas, or natural meadows. The head-waters of this creek are, I think, considerably higher than the level of Lake-Erie. They are, certainly, some hundred feet higher than the level of Lake-Ontario, near the southern border of which (I mean in the Onondago-Valley, on the

* See page 8.

† Since the preceding pages were printed off, I have been informed, that the goitre is a common complaint among the Shawnees-Indians residing on the Sioto, a considerable river which empties itself into the Ohio, below the mouth of the Muskingum.

‡ I have already observed, that there are "several cases of the disease among the Canadians who are settled at Detroit" See page 20. I have since been informed, that there are at least forty cases of goitre at this place, and that it is wholly restricted to the Canadians.

Jenisseia-river, &c.) the goitre prevails to a considerable degree.

THE Sioto is bordered with rich flats, or meadows. This river overflows in the spring-season, and then spreads about half a mile, though when it is confined within its banks it is scarce a furlong wide*.

DETROIT is situated upon an extensive flat or level piece of ground, on the banks of the Strait of St. Clair. There are no mountains in the neighbourhood, or within sight.

I HAVE already said, that the goitre has been observed, “ in the low and marshy grounds, between St. John’s and Montreal†.” These grounds are very similar to those on which Detroit is situated. They are best known by the names of flats, and table-lands. Cases of the disease have likewise been observed, in the same situations, at different places along the banks of the St. Lawrence, between Montreal and Quebec.

IT is evident, from the facts which I have mentioned, that the goitre of North-America is not

* See Hutchins’s Topographical Description of Virginia, Pennsylvania, Maryland, &c. &c. page 24. London: 1778.

† See page 17,

exclusively confined to the vallies of this continent. On the contrary, it prevails, to a great degree, in some of the high and level plains of the country, where there is no reason to suspect that the air is in an impure or stagnated state, from confinement by mountains, or by hills. It also prevails in the flats, or intervale lands, along the margins of some of our rivers, where often the neighbouring hills are of a very inconsiderable height, and seem incapable of increasing the heat or impurity of the air. I may add, that this disease is altogether unknown in many of the vallies, both such as are more spacious and those which are more narrow and also deeper, in various parts of North-America*. Upon the whole, I cannot adopt the theory of Mr. De Saussure, though I am willing to allow that it is ingeniously supported, which, perhaps, is as much as can, in rigid propriety, be said of any of the many theories that have been offered to account for the cause of the goitre. In justice, also, to this learned naturalist, I cannot help here observing, that I am of opinion, that a more extensive and critical inquiry into the topographical history of the goitre will serve to show, that a peculiar modification of the air (derived, I believe, principally from terrestrial exhalation) is somehow essentially concerned in the production of this disease.

* See Appendix.

I MUST not conclude this topographical view of the goitre of North-America without observing, that the facts hitherto collected seem to show, that, in general, this disease prevails to the greatest degree in the neighbourhood of the lakes of the country, or about the first sources of the rivers which arise near these lakes. Thus we find the goitre near those waters of the Mohock-river which take their rise near the lakes Ontario and Oneida. We find it at Oneida and at Onondago, near the waters of the same lakes; on the waters of French-creek, near Lake-Erie; and at Detroit between Lake-Huron and Erie. In this respect, as well as in many others, the American goitre bears a close affinity to the goitre of Europe. The disease is extremely common in Switzerland, in the neighbourhood of the lakes of that country, or about the waters which empty themselves into those lakes. It must not, however, be forgotten, that the goitre prevails, in many parts of the world, at a great distance from any lakes whatever. Thus, in our country, it is common at Pittsburgh, which is not in the neighbourhood of any of the lakes.



I NOW proceed to offer my own opinion relative to the cause of the goitre. On this subject, however, I shall not take up much time: for the facts

which I have collected in support of my opinion are but few in number, and are not always ascertained with as much accuracy as I could wish. In the present scantiness of correct information upon this subject, I should manifest, were I positively to say what is the cause of the disease, but a small portion of that cautious forbearance which is, perhaps, too rarely found among theoretical physicians, but which is of the highest importance in the investigation of difficult medical questions, such as that in which I am now engaged.

As glandular affections, of different kinds, are not unfrequent in countries in which intermittent fevers prevail, I was early led to conjecture, that the goitre might be occasioned by the same matter, or matters, which induce these fevers. This suspicion, I soon found, could be supported by plausible reasonings. Those very tracts of New-York in which the goitre is most common are extremely subject to intermittents, to remittents, and to dysenteries. But in the farther investigation of this question, I could not but discover, that many other parts of our country are equally subject to these fevers, where, however, the disease of goitre is entirely unknown. This remark applies, with peculiar force, to most of the Atlantic towns of the United-States.

It is not a new suspicion, that the goitre is owing to the agency of the same causes which induce intermittent and other fevers. Mr. De Saussure has mentioned, and rejected, this theory. “It is possible, and even probable (says this naturalist), that exhalations from marshes, situated at the bottom of some vallies in which cretinism prevails, may contribute to the production of this disorder: but I believe, it is rather owing to the heat which these exhalations render the air susceptible of, and to the relaxation which they produce, than to the putrid miasmata arising from the marshes: for, I repeat it, the countries of plains the most afflicted with marshy vapours are subject to fevers, and other grievous disorders, but no crétins are to be seen. And, on the other hand, we see villages cruelly afflicted with the cretinism, without having any marshes in their neighbourhood. Villeneuve d’Aoste * is a striking example of this truth†.”

ON this quotation I shall make an observation, which would, perhaps, have some influence upon the mind of Mr. De Saussure. “I repeat it, says he, that the countries of plains the most afflicted with marshy vapours, are subject to fevers, and to other grievous disorders, but no crétins are to be

* See Appendix.

† Voyages dans les Alpes, &c. Tome II. p. 486.

seen." This observation, perhaps, applies to those countries of Europe, in which the Swiss philosopher made his remarks on this disease. But, it does not apply, with equal force, to the countries of North-America. On the contrary, the disease of goitre appears to prevail, to a very remarkable degree, in some of the great plains of our country, which are subject to intermittents, to remittents, and to dysenteries. Indeed, some of the very worst forms of these diseases annually appear in almost the whole of that tract of country in which the goitre is so common. Instances in illustration of this position will afterwards be mentioned. In the mean time, I shall make a few remarks on the condition of some of those European vallies in which goitre is a very common complaint.

MR. DE SAUSSURE allows that there are marshes in some of the vallies in which the goitre is found ; but he supposes that exhalations from these marshes are no otherwise concerned in the production of the disease, than in as far as they render the air susceptible of being more heated, or as they induce a relaxation of the system. Mr. Foderé expressly says, that the disease is most common in the lowest vallies of the Alps, where the houses, surrounded with many broad-leaved and very shady trees, are situated in the neighbourhood of brooks,

rivers, lakes, stagnant waters, marshes, and are very much exposed to the south and west winds*. Dr. Haller's account of the subalpine vallies of Switzerland would lead one, independently on any other facts, to suppose, that the goitre is partly, at least, owing to the influence of marsh exhalations. These vallies, where they are level, are, according to the immortal Swiss philosopher, for the most part marshy. The soil is a bluish clay. The springs falling from the heights, stagnate upon this clay, and give nourishment to those plants, which are perpetually bedewed with water. He thinks it is evident, from the large and rounded stones, which are every where found, in digging cellars and wells, that those vallies have, in former times, been deluged by torrents of water. He supposes, from the trees which are found buried in the marshy ground, that these marshy meadows, or valley-flats, were once woodlands†.

* Effai, &c.

† “ Valles subalpinæ, frequenter, quæ planæ sunt, argillam subcæruleam pro terra habent, quæ causa est, ut fere paludescant. Aquarum enim ab acclivibus delabentium scaturigines huic argillæ innatantes stagnant, & ejusmodi stirpes alunt, quæ aqua perpetuo amant irrigari. Super eam argillam torrentes aut lapidum stratum, glareasque effundunt, aut tenues arenas, has rarius. Multiplices autem, antiquissimis temporibus, fuisse torrentum eluviones, magna & rotunda saxa demonstrant, quæ in effossis cellis puteisque passim reperiuntur. Paludosa prata olim sylvestria fuisse, ex arboribus credas, quæ in terra palustri passim reperiuntur. Super lacus ubique, ut puto, aliquot leucarum planities est, per quam parens ejus la-

FROM this account of the subalpine vallies of Switzerland, there seems to be a close affinity between the soil and state of those vallies and the soil and state of many of those parts of North-America in which the goitre is most frequent. In America, this disease, as far as I am able to judge from the facts now in my possession, principally occurs in three different situations, viz. first, in the flat or intervalle grounds, along the margins of rivers and lakes; secondly, in vallies; and, lastly, in the higher country, or country of wet plains, called natural meadows. On each of these three heads, I shall offer a few observations.

FIRST. The flats along the Mohock-river, the table-lands about Detroit, and those between St. John's and Montreal, and in short all the flat land adjacent to our lakes and rivers, are instances of the first kind of country in which the goitre is found. These flats are generally several feet higher than the adjacent waters, and, in ordinary times, are not subject to be overflowed. They are, however, generally damp, and at times, after heavy rains, the water is liable to stagnate upon them. There are several reasons for believing, that these flats were once parts of the beds of the neighbouring lakes and rivers. It is not necessary, in this place, to men-

tion these reasons. It is sufficient for my present purpose to observe, that the table-lands, of which I am speaking, are generally unhealthy situations. The diseases which they most commonly produce are intermittents, remittents, and dysenteries. Mumps (*cynanche parotidæa*), croup or hives (*cynanche trachealis*), and putrid fore-throat (*cynanche maligna*) are not unfrequent complaints on these flats.

SECONDLY. The goitre prevails in the vallies of our countries. We have seen that it is common in the Onondago-Valley, and in the vallies of Vermont. I shall afterwards observe, that it is a very common complaint in some of the vallies of Mexico and South-America*. I believe the valley-situation, when the soil is very rich, and the air warm and moist, and especially if the grounds be marshy, is, in general, peculiarly unhealthy. It is certain, at least, that some of the most unhealthy parts of America, are some of the wet or marshy vallies. The prevailing diseases are malignant fevers, and dysenteries.

THIRDLY. The goitre prevails in the higher country, or country of plains, where, however, the ground is generally wet, and often marshy.

* See, in the Appendix, the note to page 5.

Such high plains are not uncommon about the head-waters of many of our rivers, especially in the western parts of the United-States. Intermittent fevers are the most common diseases of these situations.

THE preceding observations are too imperfect to be of much consequence in elucidating the cause of the goitre. They may, however, serve to show, in opposition to Mr. De Saussure's opinion, that this disease does often prevail in the same situations in which intermittents, remittents, and dysenteries are common. This circumstance, I am aware, does by no means prove, that the goitre is occasioned by the same causes which induce those complaints: for diseases of a very opposite kind, whether we regard their original or their symptoms, are frequently found to prevail in the same situations. The *very general* prevalence, however, of goitre in places that are exposed to the influence of marsh exhalations, would, perhaps, by most dispassionate inquirers, be deemed a circumstance in favour of the theory which I am endeavouring to render plausible. It is a circumstance, which I shall still further employ in the following inquiry, where I must, once more, regret the fewness of my materials.

Do intermittents and remittents prevail in those parts of the countries of North-America, in which

the goitre is most commonly met with? I have already said that they do*. Many facts, however, must be collected before this question can be answered as extensively as it ought to be. Meanwhile, I shall mention some of those districts in which both these fevers and the disease of which I am treating are very common.

I HAVE already observed, that the Onondago-Valley, where goitres are frequent, is unwholesome†. Intermittents and remittents, and these sometimes of a very malignant kind, are frequent here. These complaints are frequent in Manlius, Pompey, and other parts of the Military Tract. They are frequent along the Mohock and Connecticut rivers; between St. John's and Montreal; about Detroit; on the Muskingum, and in almost all those parts of our country, in which the goitre is found. It has, indeed, been said that intermittents are unknown at Pittsburgh. This is not strictly true. On the contrary, these complaints are known to exist in that place, and have evidently increased within a few years.

IN the present state of our information, it will be difficult to prove that the goitre does actually

* See pages 58, 60 and 64.

† See page 51.

owe its origin to the same causes which induce intermittent fevers. We are certainly not yet prepared to decide upon this subject (as philosophers should decide upon every subject which they undertake to investigate), with caution. I may add, that many difficulties oppose themselves to the conjecture which I have thrown out. In particular, it is not easy to conceive how a general cause, stimulating the system, and inducing the cold and hot stages and other phænomena of fevers, should concentrate its action so completely upon the thyroid and neighbouring glands of the head and neck, and give rise to the disease of goitre. Perhaps, however, an extensive view of facts relative to the production of diseases by the *miasmata* of marshes, would serve to show the immense variety of ways in which these miasmata affect us, and the multifarious diseases which they induce in man and other animals. There is something very capricious in the operation of these agents. And I do not know that it is more inconceivable, that the effluvia of which I am speaking should especially affect the thyroid gland and induce goitre, than that they should especially affect the parotid glands, producing mumps; or the liver, producing hepatitis.

It may, perhaps, give some additional weight to the theory which I have proposed, to observe, that the marsh miasmata of some parts of our country

exert a particular action upon the glands of the neck and throat. Kalm has given some account of a disease, called by the Swedes, the “stitches and burning,” which, at different times, has committed great havoc at Penn’s Neck, in Jersey. “It was (says our author) a true pleurisy, but it had a peculiarity with it, for it commonly began with a great swelling under the throat and in the neck, and with a difficulty of swallowing*.”

THE complexion of many goitrous persons, especially those in whom the disease has arisen to a considerable height, is an additional circumstance in favour of the opinion which I have advanced. “Their complexion (says De Saussure, speaking of the crétins) is a yellow approaching to brown, from which probably they obtained the name of *Marons*†, which is given to them in the valley of Aoste‡.”

I WAS informed that in the state of New-York, those persons who are affected with goitre are commonly exempt from intermittents, though in the midst of persons labouring under these latter

* Travels into North-America, &c. Vol. I. p. 376, 377, &c. War-
rington: 1770. English translation.

† The maron is a large kind of chestnut.

‡ Voyages, &c. Tome ii. p. 481.

complaints. If this be a fact, it would rather serve to show, that the goitre and the intermittent are owing to the same cause.

I AM far from imagining that the preceding facts completely establish the origin of goitre from the miasmata of marshes. I have offered this opinion merely as a conjecture or hypothesis. I cannot, however, help suspecting that future and more extensive inquiries will establish the fact, that there is a very intimate connection between the disease in question and the exhalations from marshy grounds. Persuaded I am, that there is a necessary connection between the disease and a moist atmosphere*.

MR. FODERE is of opinion, that a warm and moist atmosphere is the cause of the goitre. This writer, whom I have so often quoted, made his observations in Maurienne, where the disease is extremely common, perhaps more so than in any other part of the world. It is remarkable, that the goitre prevails to the greatest degree in the western parts of North-America, where many observations have conspired to show, that there is a greater quantity of moisture in the atmosphere than

* I do not now speak of insulated or detached cases of the complaint, for they occur every where; but of the disease where it is a common complaint. Even those aerial tumours which arise in women after parturition, seem only to arise in those situations, where the complaint from marsh miasmata, or from moisture, is endemial. See page 48.

in the countries between the Atlantic and the Allegheny mountains. “ From a variety of observations (says Mr. Andrew Ellicott) I am convinced that the atmosphere in the western country, and particularly in the vicinity of the lakes, contains a greater quantity of moisture than in the middle Atlantic states. The wooden works which contained my instruments were always uncommonly swelled, and frequently very much injured in that country, though constantly defended from the rain, and occasionally exposed to the sun. The ivory and wood of my sectors with brass joints, always expanded above the metal; this expansion was not sudden, but effected by slow degrees*.”

My own observations, which will be detailed at length in another work,† coincide with those of the ingenious gentleman just quoted. The greater degree of moisture in the neighbourhood of the lakes is, perhaps, the best explanation of the fact which I have already mentioned, that in general the goitre “ prevails to the greatest degree in the neighbourhood of the lakes of the country, or about the first sources of the rivers which arise near these lakes‡.”

* Transactions of the American Philosophical Society. Vol IV. No. XXV. pages 225 and 226. Philadelphia: 1799.

† Travels through part of Pennsylvania, Virginia, New-York, &c. &c.

‡ See page 57.

MR. ELLICOTT has likewise observed, that “fogs are very common, and of remarkable density,” on the Ohio, and Allegheny, and their branches. This accords with my own observations. I cannot, however, agree with Mr. Ellicott, that these fogs do not contain “any portion of those noxious miasmata, which are so frequently combined with the fogs on the eastern side of the mountains.” On the contrary, I am persuaded, that the fogs of the western as well as of the Atlantic country are often very insalubrious. I know, at least, that many parts of the country along the Ohio, and other western waters, are very unhealthy. I do not doubt that the dense fogs are one great cause of this unhealthiness; and I believe, that such fogs are insalubrious chiefly by reason of the miasmata which they contain. This is not the place to examine the contrary opinion, which has been adopted by Mr. Ramel.



SECTION IV.



OF THE CURE AND PREVENTION OF THE DISEASE.



I DO not think it proper to conclude this memoir without saying a few words concerning the cure and prevention of the disease which I

have been considering. This part of my subject, however, shall not detain me long. I have nothing new to say; and I am not labouring to make an extensive compilation.

IF, as has often been asserted, the cure of a disease can only be completely understood, when the *causes* of such disease have been investigated with accuracy, it would follow, as a necessary conclusion, that we are not yet prepared to decide upon the best mode of treating the disease in question: for I think I have shown, that very urgent objections may be brought against every hypothesis respecting the cause of the goitre. But the rational empiric will say, that it is often an easy task to point out the method of curing a disease, even when the cause is hidden from the researches of science. And this is a position which I shall not deny.

THE remedies which have been recommended and used for the cure of goitre are numerous. They may be divided into two classes, such as are more general, and such as are wholly or chiefly topical. It is not my intention to mention even the names of all these remedies. I shall speak of some of the principal of them, and that without much regard to method. I shall say nothing of the surgical management of the disease.

AMONG the general remedies, I may mention blood-letting and purging. Sauvages tells us, that Pasta began the cure of the bronchocele Botium by bleeding and purging, after which he had recourse to the sal prunellæ, sea-water, soap, and several other means, some of which will afterwards be mentioned*. It is, I think, highly probable, that bleeding has been found very useful in the early or forming stage of goitre. But candour compels me to acknowledge, that this opinion is more the result of my theoretical notions concerning the cause of the disease, than of any particular or detailed information respecting the success of the practice.

MERCURY, which has been used with advantage in so many diseases to which we are subject, has been tried in the disease of goitre. But it is probable that it has not had a fair trial. It is certain, at least, that it has sometimes been used whilst the cause or causes which induced the disease continued to operate.

MR. SAUNDERS, whom I have already mentioned, informs us, that “a mercurial course seemed to check” the progress of goitre, “but did not prevent its advance after intermitting the use of mercury†.”

* Nosologia Methodica, &c. Tomus Primus. p. 157 and 158.

† Philosophical Transactions, for the year 1789. Part First.

DR. STEVENSON informs me, that he has heard of one gentleman who was “effectually” cured of the disease by mercury†.

WITHOUT having had any experience in the treatment of this disease, I must confess that I should expect not a little from the powers of mercury in many cases of it. It must not, however, be concealed, that some writers have mentioned mercury as one of the medicines that are rather calculated to do harm than good in goitre.

MANY other remedies have been recommended for the cure of goitre. Among these, perhaps, none has been more celebrated than the calcined sponge. Mr. Foderé has always given it half burnt, made into an electuary with cinnamon and honey; and he assures us, that he has constantly found it successful. Of this electuary, the patient takes the size of a nut three times a-day, until the tumour disappears, which is said to be generally the case within fourteen days. This author has also used soap successfully. When these remedies have failed to do good, he has had recourse to the sulphure of pot-ash (liver of sulphur), dissolved in water. The daily dose is thirty grains, dissolved in a bottle of water, and continued until the cure is effected.

† Letter to me, already referred to.

MR. FODERE says it is advisable, during the use of any remedy, to take at the beginning, and every fourteen days afterwards, a laxative. The patient must not swallow the medicine immediately, but hold it for some time in his mouth, since experience has convinced him, that the remedy thus employed operates more strongly and more quickly. Lastly, he says it is important to keep the tumour always covered and warm. This author thinks, the medicine has more effect when it is given during the wane of the moon :—an observation which will not, perhaps, increase our confidence in the efficacy of any of the means recommended by him, especially in America, where the influence of the moon in assisting the operation of medicines, or in varying the features of diseases, is less acknowledged than in many other countries.

IN some cases, frequent rubbing with dry well-smoked cloths, or saponaceous remedies, or camphor-salve, is said to be of great advantage*.

“ I HAVE directed (says Dr. Darwin) in the early state of this disease, a mixture of common salt and water to be held in the mouth, particularly under the tongue, for a few minutes,

* Effai, &c.

four or six times a day for many weeks, which has sometimes succeeded, the salt and water is then spit out again, or in part swallowed*.”

PASTA has recommended a wine-glass full of sea-water to be taken every morning for a month and a half, and the tumour to be bathed with the same water. When more powerful remedies are required, he prescribes three scruples of soap dissolved in four ounces of water, or a bolus of soap, drinking afterwards a decoction of the saponaria, or soapwort (*Saponaria officinalis*). Lastly, this author advises the frequent use of the vinegar of squill (*acetum scilliticum*) to be continued for a month, in the dose of two table-spoonfuls. He likewise recommends this vinegar to be applied externally to the tumour.†

OTHER external applications to the tumour have been recommended. Such are a sponge wetted with tepid urine and an eighth part of sal prunellæ‡; ether, and fomentations of acetated ammoniac§.

* *Zoonomia*. Vol. II. p. 115. London: 1796.

† See Sauvages, *Nosologia Methodica*. Tomus Primus. pages 157 and 158.

‡ Pasta. See Sauvages.

§ Darwin's *Zoonomia*. Vol. II. p. 115.

WE have seen that the goitre prevails among the Indians of our country. It may, perhaps, be supposed, that they are in possession of some remedies for the disease. But to me this does not seem at all probable. For although I am willing to allow, that the Indians are in possession of many active and valuable medicines, still I am persuaded, that their skill in applying them is not great. The following fact, which was communicated to me by an Indian, is not altogether unworthy of being mentioned. It will, at once, show the miserable state of *materia medica* among these people, and how ludicrously inert are the means which they employ for the removal of the disease which I am considering.

ACCORDING to my informant, the following is the best method of curing this disease. The tumour must be bathed with the spittle of a virgin, and by the virgin herself, *dum sit in menstribus*. I was assured, that the diseased person makes no other use of the virgin.

IN some parts of our country, the Indians apply the powder of burnt muscle-shells to the tumour, "but to no effect*". It is most probable that they have learned the use of this application from some of the whites.

* Mr. Heckewelder's letter to me, dated Bethlehem, December 2d, 1797.

I SHALL conclude these few and very imperfect notices concerning the cure of the goitre by observing, that I have heard of one case of the complaint in which it was thought that a watery infusion or steeping of the bark of the root of the "Key-Ash,*" was used with some advantage. The patient was a married woman, pretty well advanced in life. She drank a good deal of the infusion, and continued the use of it for some time. It was very disagreeable to take, and induced sweat.

* The Key-ash is the female of one of our native species of *Fraxinus*, most probably the Black-ash (*Fraxinus nigra* of Marshall, and *Fraxinus sambucifolia* of Willdenow). This tree is a native of various parts of the United-States. Of its medical properties, I know nothing from my own experience. I may observe, however, that in some parts of North-America, the bark and keys of the different kinds of ash are used as diuretic medicines. In Pennsylvania, the bark of Marshall's *Fraxinus alba* (which appears to be a variety of Linné's *Fraxinus Americana*) is used in intermittents, and is thought not inferior to the Peruvian bark.



A P P E N D I X,

CONTAINING

ILLUSTRATIONS AND ADDITIONS.



PAGE 5. South-America. The goitre has been known for several centuries in South-America. The earliest notice that I have been able to find concerning it is in the *Royal Commentaries of Peru*, by Garcillasso de la Vega. This writer informs us, that the Inca Tupac, after having subdued the province of Cassamarquilla, “proceeded to another people called *Papamarca*, from the *Papas* or Dewlaps, which are great bunches that hang from their throats*.” It will not be doubted that these “great bunches” were goitrous tumours. The *Papamarca* are said to have been very numerous. Tupac Ynca Yupanqui was the eleventh king of Peru. Mr. De Pauw speaks of the goitre as a disease of the Indians inhabiting the foot of the Cordilleres. He ascribes it to the use of snow-water, and says it is called in the language of the country, *Coto*. He quotes, as his authority, the voyage of Sieur Acarette to Peru†. The Abbé Clavigero seems to speak of the goitre as a disease unknown in

* *Royal Commentaries, &c.* Translated by Sir Paul Rycaut. Page 305. London: 1688.

† *Recherches Philosophiques sur les Americains, &c.* Tome Premier, p. 128. A Berlin: 1777.

America*. I have not only shewn that it exists, but that it is a very common complaint, in many parts of North-America. I shall now show that it has long been known in that part of America in which Clavigero resided, for many years. Thomas Gage takes notice of the disease as frequently occurring at Sacapula, in Totonicapan. He first observed it in the Prior of this place, “ who, says Gage, looked most fearfully with a bladder from his throat swelled almost round his neck, which hung over his shoulders and breast, and stay’d up his chin, and lifted up his head so, that he could scarce look any whither but up to heaven. In our discourse he told me that disease had been upon him at least ten years, and that the water of that river (the river which runs through the valley) had caused it in him, and in many others of that town.—When I came to the town I discovered many men and women with bladders in their throats, like the poor Prior, which made me almost unwilling to drink there any chocolate made with that water, or eat any thing dressed with it, until the Prior did much encourage me, and told me that it did not hurt all, but only some, and those who did drink it cold.—The air is hot, by reason the town standeth low, and compassed with high hills on every side†.”

As the veracity of Gage has, by some writers, been called in question, it may, perhaps, be deemed necessary to adduce some other authority for the existence of the goitre in this part of America. I have lately been informed, by a very intelligent Spanish gentleman, that this dis-

* The History of Mexico. Vol. II. p. 340. London: 1787.

† A New Survey of the West-Indies. p. 255 and 256. London: 1699.

ease is very common in different parts of North-America, as in Nueva Galicia, Guatemala, Nicaragua, Santa Fe, &c. It prevails to the highest degree in Guatemala and at Santa Fe. In the first of these places, it is called *Güegüechos*, and in Santa Fe, *Cotas*. It affects men, women, and children, but is never accompanied with cretinism. Mr. Mütis, the celebrated botanist, has published a memoir upon the disease, which, it is said, is evidently much more common now than it was eighty years since. I exceedingly regret, that I have not had an opportunity of seeing this memoir.

It is a folly to attempt to prove that the climate of America is *peculiarly* healthy. Candour is too rare a virtue among philosophers; and the desire to establish systems has deluged the world with errors, and with fables. A list of the indigenous diseases of America (notwithstanding what the Abbé Clavigero has said) would not be found much, if at all, less extensive than the list of these infirmities in other parts of the world.

Page 8. Fort-Dayton. This place is situated upon a large flat, or piece of low ground, on the Mohock-river, about sixteen miles from Old-Fort-Schuyler. The whole of the flat is occasionally liable to be overflowed by the waters of the river. Around the flat there is a tract of pretty high ground.

Henderfon-town. This place, the proper name of which is Anders-town, is about twelve miles to the south-east of the German-Flats. The lands in the neighbourhood are high and dry, but there are no mountains.

“ Swelled neck.” In some parts of New-York, this complaint is called the “ thick neck.” Either in this state, or in Pennsylvania (perhaps in both) it is called the “ big throat.” This nomenclature is sufficiently descriptive for common use, and is likely to be retained in the countries in which the disease prevails.

Page 9. Manlius. I am informed, that the goitre is most common about the centre of this township. Manlius is one of the most eastern ranges of military townships. It is watered by some considerable streams which run into the Oneida-Lake, and by some small streams which run into the Salt-Lake of Onondago. It abounds in limestone (See pages 25 and 26), much of which appeared, from my examination, to be composed of shells.

Page 12. “ The goitre of the state of New-York is not confined to the human kind.” Sir George Staunton says “ whatever be the cause which occasions goitres in the human frame, it has no perceptible effect upon other animals*.” This may, perhaps, be the truth, as far as respects the vallies of Tartary, where he observed the disease. But Mr. Coxe’s observation, which I have mentioned (See page 14), ought not to have been forgotten by Sir George; and the facts which I have noticed (See pages 12, 13 and 14) incontestibly show, that in the state of New-York, other animals, beside man, are affected with goitrous tumours. Hitherto, I have not learned, that our animals are subject to such tumours in any other part of

* An Authentic Account of an embassy from the king of Great Britain to the emperor of China, &c. &c. Vol. II. chapter iii. p. 63. Philadelphia edition.

North-America. This subject is well worthy of an attentive investigation.

Page 18. " The goitre is not uncommon in the county of Bennington, and state of Vermont." The disease is likewise known in the county of Chittenden, in the north-west part of the same state. I am not, however, authorized to say that it is a frequent case in Chittenden. The cases which were mentioned to me occur at Jericho, on Onion-river, which runs into Lake-Champlain. The situation a valley, or as it is frequently called in the United-States, a " hollow." Chittenden, on the west, borders upon Lake-Champlain.

" Cohos-country, in Connecticut." This is a mistake. The Cohos is not, as Mr. Geddis says, in Connecticut, but on the Connecticut-river, in the states of Vermont and New-Hampshire. The following is Mr. Morse's account of this country. "*Coos, or Cohos, the country called Upper and Lower Coos, lies on Connecticut-river, between 20 and 40 miles above Dartmouth college. Upper Coos is the country south of Upper Amonoosuck-river, on John and Israel rivers. Lower Coos lies below the town of Haverhill, south of the Lower Amonoosuck. The distance from Upper Coos, to the tide in Kennebeck-river, was measured in 1793, and was found to be but 90 miles*.*" The true Cohos is, I am informed, a flat, liable to be overflowed by the spring-floods of the Connecticut-river.

* The American Gazetteer, &c. article Coos, or Cohos. Boston: 1797.

“ Cases of goitre are met with among the inhabitants on the waters of the Allegheny and French-Creek, and at Sandusky.” The lands near French-Creek, where the disease is frequent, are level, as are likewise those near Sandusky.

“ A few instances on Monongahela.” Mr. Brackenridge informs me, that there are some cases of the complaint at Brownsville, or Redstone Old-fort, a town on the southeastern bank of the Monongahela, about thirty-seven miles nearly southerly from Pittsburgh. Some of the worst cases in the western parts of Pennsylvania occur at Brownsville. Mr. Albert Gallatin, member of Congress, has informed me, by letter, of several cases in this part of the country. “ All these cases occurred in the country between the most westerly ridge of mountains (called from Youghiogheny-river, northwardly, Chestnut-Ridge, and which, from that river, southerly, to its termination on Cheat-River, in Virginia, about eight miles south of the southern Pennsylvania boundary, assumes the name of Laurel-Hill) and the Monongahela-River, not more than fifteen miles westward of the said mountain; but how much farther westward it may have occurred he does not know.” Most of the cases, Mr. Gallatin informs me, “ were slight, the swelling not greater than he has frequently seen at Geneva, in Switzerland.” Some of the cases, however, were more serious, particularly one or two at Morgantown (in Virginia), which is situated upon the east side of the Monongahela, about seven miles from the entrance of Cheat-River into that river. Morgantown is situated upon open and elevated land, “ not bottom-land, but of gentle ascent and level.” One of the patients (a married lady) having

applied a mercurial necklace to the tumour, caught cold, and died in a few days, about four years ago. I knew this lady in 1785, at which time she resided upon one of the western branches of the Monongahela, called Muddy-Creek. She had, then, nothing of the complaint.

The face of the country in which the cases mentioned by Mr. Gallatin occurred, is "very hilly," but less so than that of many of the other western parts of Pennsylvania and Virginia. The water usually drank, spring; at Morgantown, well-water: in neither case (Mr. Gallatin believes) lime-stone-water. "In every case I know, says this gentleman, the situation is open, no trees left standing, and large plantations cleared around." He particularly mentions two cases occurring on a farm, about four miles north-east of Brownsville, the same distance from the Monongahela, ten miles from the Laurel-Hill, and half a mile from Dunlap's creek. "Situation of the house almost at the bottom of a hill, not very steep nor high, as it is cultivated to the very top; and on the verge of a valley containing about one hundred acres of meadow in front of the house. This meadow is crossed by a run, and part of it is liable to occasional overflowing. The land of the greater part of the plantation is first rate, and about two hundred and fifty acres are cleared*."

Mr. Brackenridge informs me, that there are a few cases of goitre at Cannonsburgh, a small town situated on the north-side of the west branch of Chartier's creek, about seventeen miles south-west of Pittsburgh. Chartier's is a

* Letter to me, dated April 8th, 1800.

branch of the Ohio, into which it empties itself about five miles below Pittsburgh.

Page 19. "It does not appear from Dr. Stevenfon's letter, that the disease has, in any instances, arisen to a very troublesome or alarming height." I am, however, informed, that in two cases (both females) in Pittsburgh, the tumour has grown "to an enormous size." A young woman at Brownsville was, for years, affected with this tumour "almost to suffocation." It was considerably larger than her breasts. The complaint was "removed" by a Dr. M.

Page 28. "There is no lime-stone in the county of Bennington." I have since been informed, that both lime-stone and marble are very abundant in this county.

Page 35. Township of Pompey. This township is adjacent to Manlius, by which it is bounded on the north. It is watered by the same principal streams which water Manlius. The Onondago-Creek, which is the western boundary of both the townships, runs northerly into the Salt-Lake of Onondago.

Page 37. Tophus Ludus. This is the Porus of some of the old authors. The Tophus Polymorphus of Wallerius. Syft. Vol. II. p. 394. The Tophi of Kirwan, p. 25. It is called Duckstein by the Germans. Is formed by the gradual deposition of earths, especially the calcareous earth, which are diffused in water. Of a soft and porous texture (hence the old name Porus). These incrustations are very abundant in many parts of North-Ame-

rica, but perhaps no where more abundant than in the same parts of the Military Tract, where the goitre is a common disease. See pages 25 and 26.

Pages 42 and 43. "As we approach the northern parts of our continent we find a great many of the plants of northern Europe. This fact," &c. It has long been known, that the northern parts of America possess a great many of the vegetables of the north of Europe and Asia. Kalm says near half of the plants which are met with at Lorette, in Canada, grow in the woods and morasses of Sweden.* He tells us, that the forb-tree, or mountain-ash, the cranberry-bush, the juniper-tree, the sea-side pease, the Linnaea, and many other Swedish plants, are likewise to be met with at Bay St. Paul†. I am persuaded, that some of the plants mentioned by the Swedish traveller are not *specifically* the same in Europe and in America. But I am equally persuaded, that (exclusively of the mosses and other cryptogamick plants) there is a considerable number of plants that are common to those continents. A list of these, together with their comparative magnitude, extent of range through the country, &c. will be particularly attended to in the Introduction to my FLORA of Pennsylvania and the adjacent states.

Page 46. "I have taken notice, says he, when it first made its appearance in girls, which was never until they were employed in carrying burdens." This observation of Mr. Heckewelder is a curious one, and deserving of at-

* Travels, &c. Vol. III. p. 160.

† The same, p. 212.

tention. Perhaps, however, it only shows that the goitre has often a peculiar tendency to appear about the age of puberty. Mr. Saunders, speaking of this disease, says, "It generally appears in Boutan at the age of thirteen or fourteen, and in Bengal at the age of eleven or twelve; so that in both countries the disease shows itself about the age of puberty.*" Several of the cases of which I have received information first occurred about the age of puberty. Mr. I. O. at the age of fourteen, first "became sensible of the swelled throat," at Cannonburgh, already mentioned. I cannot, however, from the few facts now in my possession, pretend to assert, that the goitre is particularly disposed to appear about this time of life. It must be remembered, that many of the persons affected with this disease, had not an opportunity of contracting the complaint until they had passed the era which I have mentioned. Moreover, it is certain, that many persons who have been born and bred in the districts where it prevails, have been seized with the swelling long before the age of puberty. See page 19. I am informed that at Detroit it commonly makes its appearance in children about the age of three years. Mr. Foderé says, it generally appears, in Maurienne, about the seventh or eighth year. However, he saw one case in which the tumour arose as early as the fourth day.†

Page 49. Cretinism. I have heard of some cases of cretinism among the Indians inhabiting the neighbourhood of Sandusky. But such cases are undoubtedly very rare in

* Philosophical Transactions, for the year 1789. Part First.

† Essai, &c.

North-America. This circumstance, as I have remarked, is “well calculated to show that the goitre and idiotism are not *necessarily* connected with each other.” If, however, cretinism be ever the consequence of goitre (and of this, I think, there can be little doubt), there is much reason to fear, that at some future period, crétins will not be uncommon in some of those vallies and other situations of America where goitre is now a frequent complaint. Time only may be wanting to produce the dreadful calamity, which depriving man of his physical and intellectual strength, and, by consequence, unfitting him for the various duties of life, reduces him to the condition of the brute. A fact mentioned by Mr. Foderé will show that my suspicion is not entirely without a foundation. This writer, after remarking that the goitre is either hereditary or casual, says, if but one of the parents has a casual goitre, it will not be inherited by the children: but if two persons afflicted with the disease, intermarry; if this be continued through several generations, and if they remain in a neighbourhood where the disease is endemial, then the children of the second and third generation will be afflicted with the goitre, and cretinism will generally follow*. In Europe, where this disease has been known for near two thousand years, as the observation of Juvenal shows†, there has been time sufficient to give rise to cretinismus, if a long continuance of time will produce it. In many

* Effai, &c.

† Juvenal was born about the beginning of the reign of the emperor Claudius, and is supposed to have died about the eleventh year of the reign of Adrian. He may be said, therefore, to have lived between the years 41-46 and 127, after Christ. It is evident from the passage which I have quoted (See page 5), that the “tumidum guttur,” or goitre, was a very common complaint in the time of the great Roman Satirist.

parts of America, on the contrary, the causes have not had an opportunity of producing all their full effects; for few of those districts in which the goitre is known to exist have been inhabited by the same people during a period of even two hundred years. The aboriginal (or rather Indian) inhabitants of North-America have ever been distinguished for their rambling disposition*. None of the European settlements in America are three hundred years old, and many of those in which the goitre is most common are not forty. Some of the most ancient European settlements in the new world are those of Guatemala, Santa Fe, and other parts of the southern countries of North-America: and it is in these countries that the goitre is most common. It was common at Sacapula, when Gage visited that place, in the year 1626: it is still common there. At the village of Iacaltenango, in the neighbourhood of Sacapula, it is asserted that every one of the inhabitants has a goitre; and it is certain, that the disease is beginning to excite great alarm in these and other Spanish settlements of America†.

Page 51. "It is a circumstance greatly in favour of Mr. De Saussure's theory, that the goitre, in almost every part of the world, seems to prevail in the valley-situation." We have already seen that in Switzerland and Maurienne, the disease is chiefly confined to the vallies of those countries. Mr. Marsden says, it is a very common complaint in the vallies of Sumatra, "through the whole extent of the island." He is persuaded that the disease is

* See New Views of the Origin of the Tribes and Nations of America, Appendix, pages 10, 11, 12. Philadelphia: 1798.

† See Gazeta de Guatemala. Tom. II. Num. 50, for February, 1798.

“ immediately connected with the hilliness of the country.” The people whom it effects are called in Sumatra *Orong goonong*.* Mr. Saunders observed the goitre in Boutan, at the foot of the hills†. Sir George Staunton says, it is a frequent complaint in the vallies of Tartary, north of the great wall. The following are this respectable author’s words. “ In villages dispersed through such vallies,” —vallies “ with a contracted horizon and darkened atmosphere” ————— “ many of the inhabitants were found labouring under a disorder observed in similar situations in the Alps, and known there by the name of goitre, or swelled neck. The glands of the throat begin at an early age to swell, and gradually increase, in some, to an enormous size. The swelling begins immediately below the parotid gland, and generally extends under the jaws from ear to ear, affecting all the submaxillary glands. Dr. Gillan estimated that nearly one-sixth of the inhabitants he saw had this deformity; which is said, however, not to appear such in the eyes of those villagers. Both sexes are subject to these swellings, but females more than males; the latter removing oftener from the spots where the causes exist, whatever they may be that occasion them‡.”

Mr. Park informs us, that goitres are “ very common” in some parts of the country of Bambarra, in Africa§. But he does not tell us in what particular situations the disease is found.

* The History of Sumatra, &c. page 42. London: 1783.

† Philosophical Transactions, for the year 1789. Part First.

‡ An Authentic Account, &c. page 62.

§ Travels in the interior districts of Africa, &c. &c. page 312. Philadelphia edition.

Page 56. "I may add, that this disease is altogether unknown in many of the vallies, both such as are more spacious and those which are more narrow and also deeper, in various parts of North-America." Although the goitre is so common at Pittsburgh, and in other parts of our western country, I have lately been assured, that it is unknown in the neighbouring vallies between the Allegheny-mountains. It is also unknown in the Cheerake-vallies, which, from the accounts I have received of them, are very similar to the goitre-vallies of Switzerland.

Page 59. Villeneuve d'Aoste. This town, which is situated in a recess shut in by pretty high mountains, is remarkable for the great number of crétins which it contains. The following picture of these miserable wretches is too interesting to be omitted. It will form a proper supplement to the note on cretinism. "The first time, says Mr. De Saussure, I went to Villeneuve, all the rational beings of the village had gone out of it, for the purpose of attending to their agricultural labours; there remained, or at least we saw in the streets, only idiots. I was not then acquainted with the exterior signs of that disease; I addressed myself to the first I met, for the purpose of asking him the name of the village; and as he gave me no answer, I addressed myself to a second, afterwards to a third; but a melancholy silence, or some inarticulate sounds were their only answer, and the stupid astonishment with which they looked at me, their enormous goitres, their big half-open lips, their heavy and thick eye-lids, their under jaws hanging down, their swarthy complexion, had something in them altogether frightful. One would have said, that some malignant genius had transformed into stupid ani-

mals all the inhabitants of this unhappy village, leaving them only so much of the human countenance as was necessary to enable us to know, that they had been men. I left it under impressions of terror and sadness which will never be effaced from my remembrance*.”

Page 70. Fogs. Mr. Marsden ascribes the goitre of Sumatra to the fogs of that island. “ From every research, says he, that I have been enabled to make, I think I have reason to conclude, that the complaint is owing, among the Sumatrans, to the fogginess of the air in the valleys between the high mountains, where, and not on the summits, the natives of these parts reside.” He says, that “ between the ranges of hills” there is a dense mist, called the *caboot*, which is “ visible for several hours every morning; rising in a thick, opaque and well defined body, with the sun, and seldom quite dispersed till after noon. This phenomenon, as well as that of the wens, being peculiar to the regions of the hills, affords a presumption that they may be connected; exclusive of the natural probability, that a cold vapour, gross to an uncommon degree, and continually enveloping the habitations, should affect with tumors the throats of the inhabitants. I cannot pretend to say, continues our ingenious author, how far this solution may apply to the case of the goiters, but I recollect it to have been mentioned, that the only method of curing these people, is by removing them from the valleys, to the clear and pure air on the tops of the hills; which seems to indicate a similar source of the distemper with what I have pointed out†.”

* Voyages, &c. Tome II. p. 389, 390.

† The History of Sumatra, &c. p. 42.

I had not an opportunity of consulting Mr. Marsden's work, until after the first eighty pages of this memoir were printed off. I consider the facts which he mentions as being very favourable to the theory of the cause of goitre which I have advanced. I may add, that at Pittsburgh, where the disease is common, there is every morning, in the summer and autumnal months, an extremely dense fog, which is not dispersed until a good while after sun-rise. The people of this town, even those who speak in the highest terms of the healthiness of the place, do not attempt to deny, that the fog is remarkable, and very disagreeable to the feeling.——Upon the whole, the farther I proceed in this inquiry, the more I am inclined to believe, that the principal remote cause of goitre “ is a *miasm* of the same species as that which produces intermittent and remittent fevers, dysenteries, and similar complaints.” I pretend not to determine, what is the precise nature of that *miasm*. This and many other points which I have touched upon, in the preceding pages, I submit, for the present at least, to the judgment of those who have leisure, and more inclination than myself, to woo the “ FAIRY FAVOURS†” of conjectural science.

† Dryden.

THE END.

PHILADELPHIA,

May 26th, 1800.

ERRATA, &c.

In the PREFACE, page vi, *for* set, *read* fit.

Page 29, *for* one country, *read* our country.

47, *for* bronchia, *read* trachea.

50, *for* reflected back, *read* reflected.

52, *for* Alleghaney, *read* Allegheny.

70, title, *for* OF THE CURE AND PREVENTION OF THE DISEASE,
read OF THE CURE OF THE DISEASE. In the same page,
last line, *for* the cure and prevention of the disease, *read*
the cure of the disease.

33 and 44, in the margin, *erase the words*, See Appendix.
